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OCTOBER 1985
VOLUME 3
ISSUE 10

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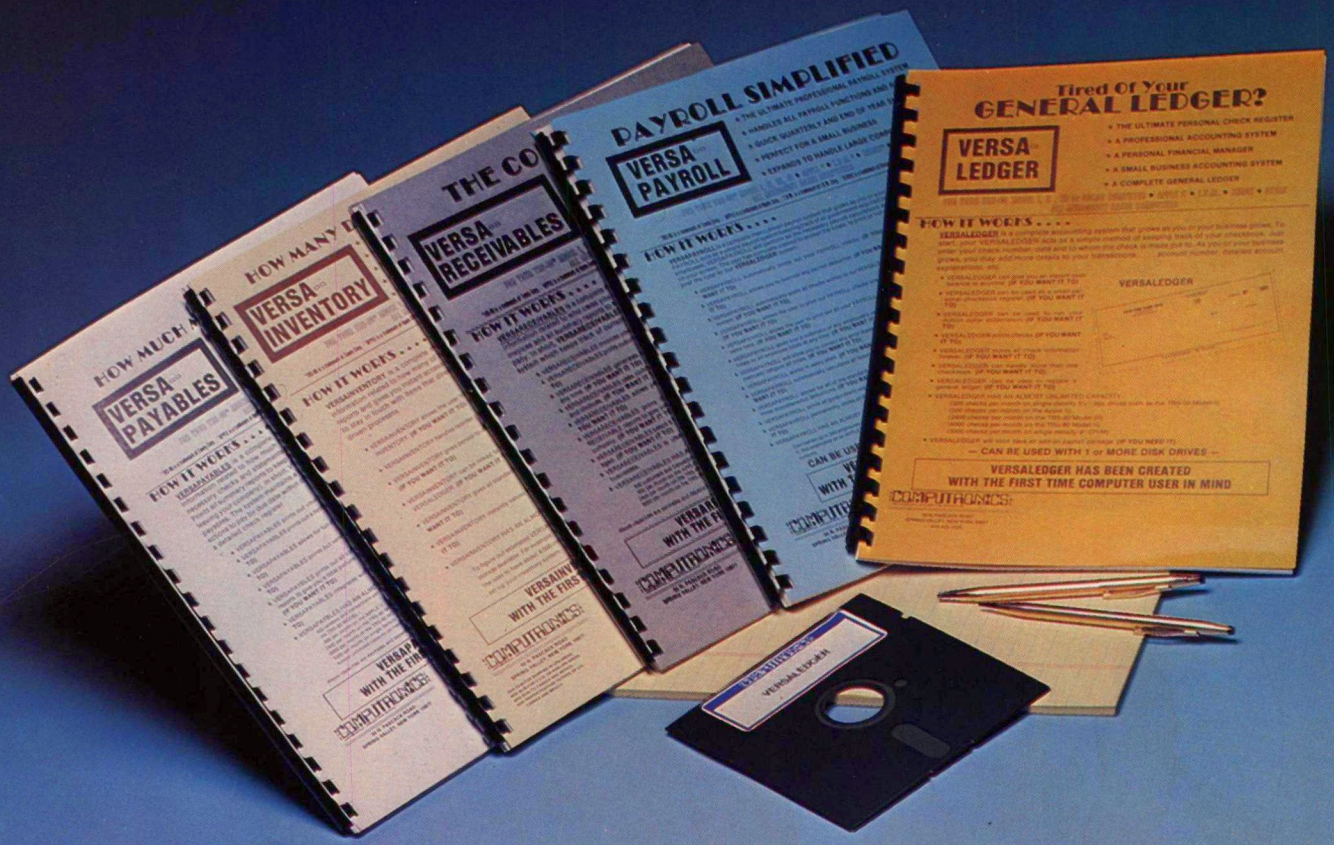

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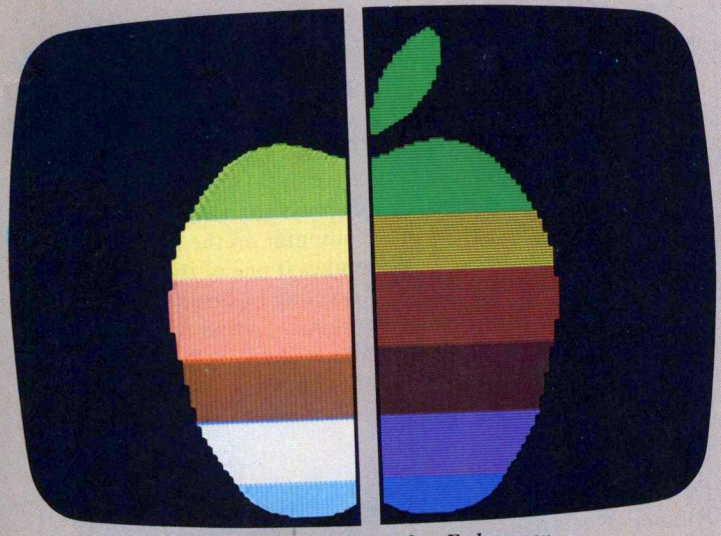

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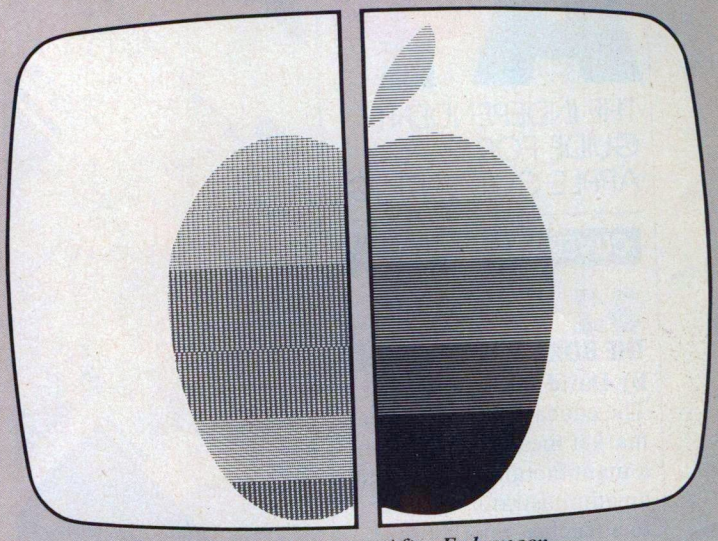

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Color and Screen Enhancers for the Apple IIe, IIc.

VOLUME 3/ISSUE 10/OCTOBER 1985

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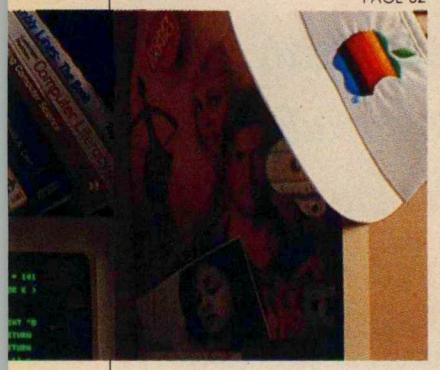

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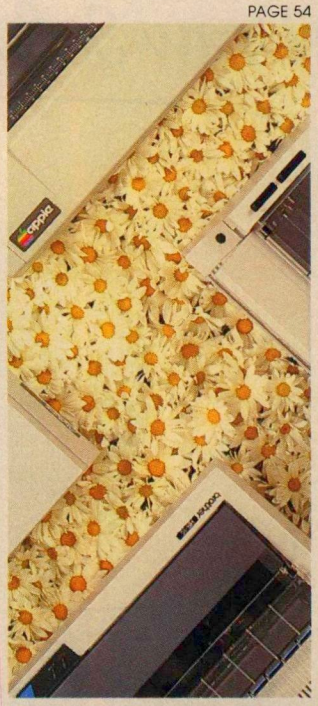

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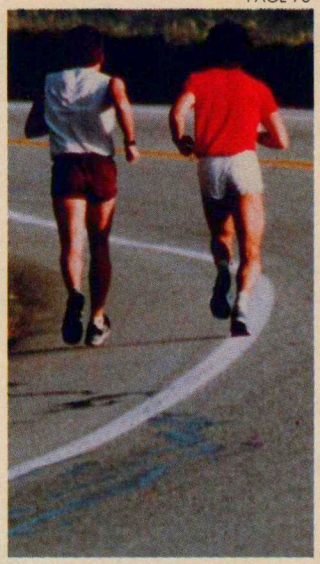

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Fill out the ballot: Become eligible to win a free Macintosh by helping your favorite software packages win the golden *A+* Readers' Choice Software of the Year Award.

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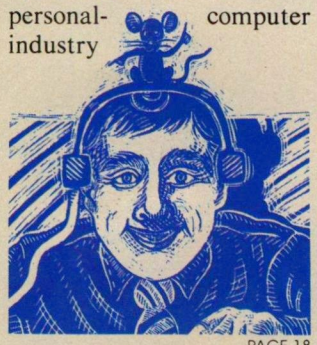

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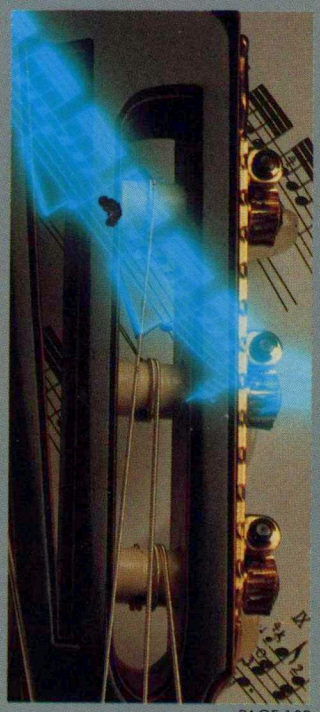

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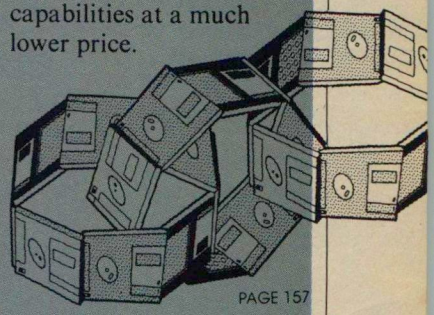

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Suggestions from our readers include a way to get evenly spaced letters, interpret the Mac's expressive face, make ditto masters, and round numbers.

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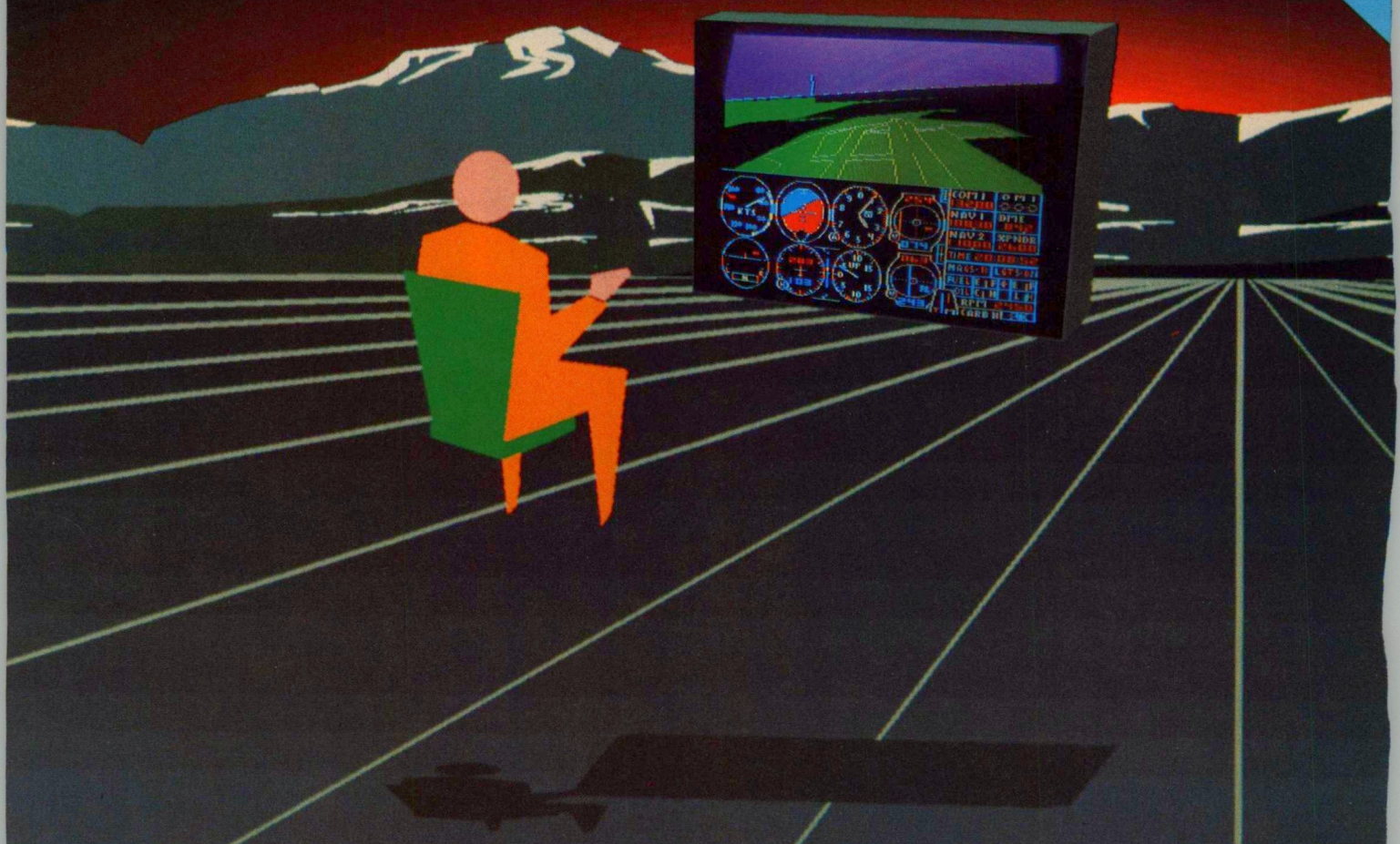

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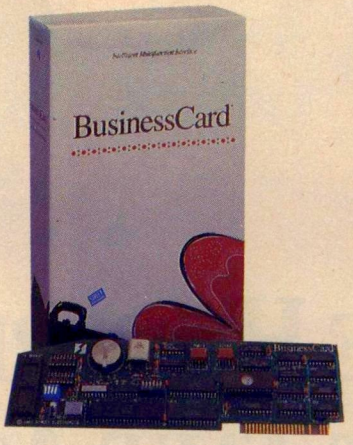

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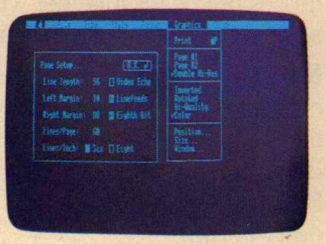

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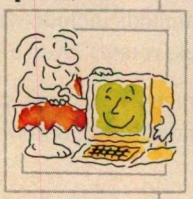

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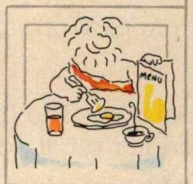

In fact, if you know how to buy breakfast, you already have the know-how you'll need to access any subject in our system. That's because it's "menu-driven," so beginners can simply read the menus (lists of options) that appear on their screens and then type in their selections.

Experts can skip the menus and just type in "GO" followed by the abbreviation for whatever topic they're after.

In case you ever get lost or confused, just type in "H" for help, and we'll immediately cut in with instructions that should save the day.

Besides, you can either ask questions online through our Feedback service or phone our Customer Service Department.

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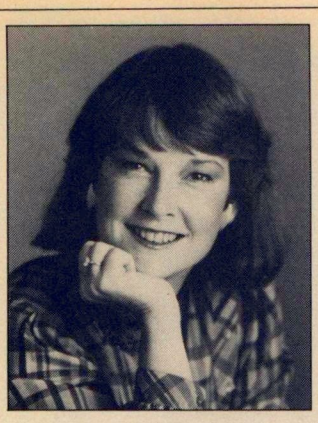


Systems solutions and software applications will be Apple's new emphasis as it emerges from its recent reorganization.

APPLE HAS A LOT IN STORE FOR YOU

When we left you last month, Apple was suffering through a tough reorganization, and it continues to be the center of much local and national press coverage. In the meantime, I have been in and around Apple trying to find out what this reorganization means and what the future holds for Apple owners.

"Apple has a lot in store for you" was the message I've heard from the people I've met with, including such seasoned veterans as Del Yocam and Guy Kawaskai. I also had the opportunity to meet with some of the new talent brought to Apple in the wake of the reorganization. I was particularly pleased to see an infusion of marketing people, such as Mike Lorelli, who have used the Apple II for years and, as Apple enthusiasts, relate well to the needs of all you Apple aficionados.

I am pleased to report that after my meetings with the folks at Apple, I can confidently say that the management of Apple has taken a decisive turn in your direction. I can't give away specifics, but I can tell you that compatibility is the name of the game. According to Del Yocam, Apple Computer is in the second stage of growth (the first was hardware innovation and development), in which systems solutions and software applications are the company's emphasis, which bodes well for the Apple community. What this new direction means is that Apple is working on developing products that meet your needs, from telecommunications to teaching. Yocam emphasized that Apple is focusing on the markets that have made it so successful—small and medium business, and education. Apple is in terrific financial shape, by the way, with no long-term debt and approximately $250 million in the bank!

Well, enough about the inner workings of Apple. As I said in my last column, I don't generally discuss the internal machinations of Apple Computer, Inc., but I want you to know that Apple is doing just fine. And, finally, I'll wager that Steve Jobs is not out of the picture by any means and that the management will find ways to tap Steve's special talents.

As a result of Apple's refocusing its attention on the education market, we are responding with more articles on this subject and a column on education called "The Learning Curve." Its author, David Thornburg, is well-known and respected in both the education and computer fields. He will write about many aspects of education, from controversial issues to insights into products. We want this column to evolve to serve you best, so please write David or me with comments on or suggestions for articles.

This issue's theme is education, so our cover story by Thornburg concentrates on some of the problems parents and teachers deal with in using computers as educational tools. We also have a series on how to use software you already own to educate your children about computers.

Last, but not least, we are sponsoring our second annual Readers' Choice Award. We always want to know your needs and opinions, and this is our way of letting you have your say about the products advertised and reviewed in *A+* and other magazines. Please be sure to fill out the ballot you will find in this month's issue and make your vote count. We will publish the results in an upcoming issue. Thanks for your participation. +

Maggie Canon

MAGGIE CANON/**EDITOR**

How to get the most bytes out of your Apple.

Read why Steve Wozniak recommends RamWorks™ expansion cards.

The machine that Woz built is a powerful business computer. AppleWorks gave it a potent 1-2 combination. Now, RamWorks has added the knock out punch. With RamWorks expand the total memory of your IIe up to an incredible 2.5 MEG. Your AppleWorks will no longer be limited by the amount of factory supplied RAM. And you'll be able to perform virtually any application you want with far greater speed and ease.

How AppleWorks works best with RamWorks.

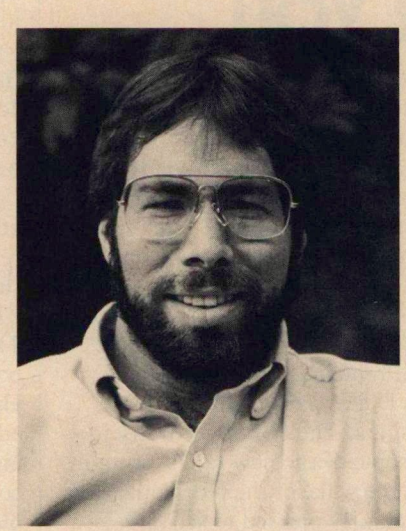
RamWorks plugs into the IIe auxiliary slot and acts just like Apple's extended 80 column card. If you buy a 256K or larger card, AppleWorks will automatically load itself into RamWorks. This dramatically increases AppleWorks' speed because it effectively eliminates time required to access disk Drive 1. Now, switch from word processing to spreadsheet to database management at the speed of light. AppleWorks responds the moment your fingers touch the keyboard.

But AppleWorks has certain internal limits, independent of available memory. Fear not. Only RamWorks removes those limits with a proprietary, easy to operate program that "patches" onto the boot disk in seconds. Only RamWorks increases the maximum number of records available to you from 1,350 to over 5,000. And only RamWorks actually increases the number of lines permitted in the word processing mode.

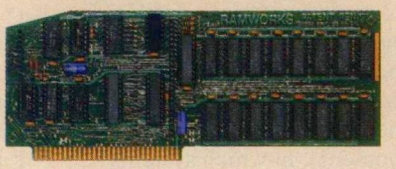
Plus, when you create an AppleWorks file larger than your disk capacity, only RamWorks automatically segments it to the appropriate size. RamWorks then prompts you to insert more disks, so you can save any size file on regular floppies or hard disk.

The most friendly, most expandable card available.

RamWorks is compatible with more off-the-shelf software than any other RAM card. Popular programs like Magic Office System, Flashcalc, The Spread Sheet, Diversi-DOS, Supercalc 3A, Magicalc, etc. (And hardware add-ons like Profile and Sider hard disks.) Fact is, RamWorks is 100% compatible with all software written for the Apple 80 and extended 80 cards. In addition, RamWorks can emulate other RAM cards, so you can use programs written for them without modification.



"I wanted a memory card for my Apple that was fast, easy to use, and very compatible; so I bought RamWorks."



RamWorks was designed so you could take full advantage of future developments in 16 and 32 bit microprocessors. As your needs grow, so can RamWorks. A handy expansion connector allows the latest and greatest co-processor cards to access RamWorks' memory. And allows you to piggyback another 2 MEG. Clear instructions show you how to plug in more memory.

For only $129 you can add an RGB option to your RamWorks and get double high resolution color graphics. All with a super sharp brilliance that's unsurpassed in the industry.

More features than you can shake a mouse at.

A word from the Woz should be sufficient. Because there's only one card like RamWorks. Imagine how you will benefit from these features: • 15 DAY MONEY BACK GUARANTEE • Sharp 80 column text (with or without RGB option) • Double high resolution graphics (with or without RGB option) • EXPANDABLE TO 2.5 MEGABYTES • Can use 64K or 256K RAMs in any combination • Adds memory to AppleWorks • Co-processor connector • Accelerates speed of AppleWorks • 100% COMPATIBLE WITH ALL IIe SOFTWARE • RAM disk software available (compatible with Applesoft, PRO-DOS, DOS 3.3 and PASCAL—$29) • RAM disk available for CP/M ($29; included with our CP/M card) • RGB color option • Takes only one slot • FIVE-YEAR NO HASSLE WARRANTY.

RamWorks with 64K ($179); 128K ($219); 256K ($249); 512K ($319); 1 MEG ($519); 2.5 MEG ($1599). **CALL 214/241-6060 TO ORDER YOUR RamWorks TODAY.** (9 a.m. to 11 p.m. 7 Days, or send check or money order to Applied Engineering. MasterCard, Visa and C.O.D. welcome. Texas residents add 5⅛% sales tax. Add $10.00 outside U.S.)

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(214) 241-6060

APPLEWORKS MODIFIER

Dear *A+*,

You read our minds in the July 1985 "News+" reference to AppleWorks Modifier from Videx ("AppleWorks for Apple II and II Plus"). In addition to providing this program, which transports AppleWorks to the Apple II Plus, Videx has released RAM-expansion drivers that utilize the Titan Technologies (formerly Saturn Systems) and Legend RAM cards. Now, these 64K and 128K RAM cards can be used with AppleWorks in the Apple II Plus to provide more editing space.

This new revision of AppleWorks Modifier costs $59, and Videx customers can arrange to update their present diskettes for $10 by calling our Customer Service Department.

William Leineweber
Customer Service, Videx
1105 N.E. Circle Blvd.
Corvallis, OR 97330
(503) 758-0521

THANKS TO APPLE

Dear *A+*,

Regarding Mark Andrews' "The IIc Communications Gap" in the May 1985 issue of *A+*, the Apple Modem 300 that I own didn't seem to have any problems communicating with the local bulletin-board services until I called BBSs that were using U.S. Robotics 212A modems. Everyone wanted to blame the problem on bad phone lines until I showed the May issue of *A+* to my dealer. He received permission from Apple Computer, Inc., to replace the motherboard in my IIc. My computer now works perfectly with the Apple Modem 300. Thanks to you for a very informative article and to Apple for backing up its products. Have you thought of having a modem line installed for "Letters to the Editor"?

Jim DeNike
Okemos, MI

Readers can send letters to us electronically via MCI (ask for "APLUS").

CAMP ADDITION

Dear *A+*,

Of special interest to me in the June issue of *A+* was your article on computer camps.

The article was insightful and, I think, helpful to the parent or child trying to find a computer camp. I am the Education Director at Midwest Computer Camp in Indianapolis, Indiana. We are recognized by many educators as one of the finest facilities in the country that specializes in computer education for young people. The camp has been in operation for four years, and more than 9000 children attend our year-around, residential facility. I like to think that we have the experience and expertise that most computer camps can only dream of. We are an ACA accredited camp, which also sets us apart from most computer camps.

Since we are such a fine camp, I was concerned that we were overlooked in your article, especially since we do use Apple equipment (Apple II Plus, IIe, and IIc) in addition to all other popular brands of microcomputers. Our curriculum includes BASIC, Pascal, assembly language (6502, 6510, 8088, and Z80), robotics (Heathkit Hero I), graphics, music, applications (word processing, database, spreadsheets, and utilities), printer use, DOS, telecommunications (utilizing the camp's very popular bulletin board), and nearly any other computer-related area that campers are interested in. In addition, we have a wide variety of traditional camp activities available for the children.

Marc B. Rhodes
Midwest Computer Camp
Indianapolis, IN
(317) 297-2700

APPLE III USERS' GROUP

Dear *A+*,

As an Apple III owner I appreciated your recent series on Apple III software. To my knowledge, the most active users' group in the San Francisco Bay Area devoted to the III is the Apple Three Users of Northern California. This is a nonprofit organization and is not associated with any one individual or business. Its express purpose is for education and exchange of information. Those who are interested may write to Apple III Users of Northern California, 220 Redwood Highway, #184, Mill Valley, CA 94941, or call DRACO NET BBS at (415) 474-8606 and leave feedback to the SYSOP.

Patrick V. Ford, M.D.
San Francisco, CA

A CONVERT SPEAKS

Dear *A+*,

First let me say that I am one of the all-time Apple lovers. I fell in love with the Apple many years ago, so you can imagine my delight when I brought mine home only last year (16 months ago). Being the proud owner of a IIe and a very successful home-computer business, I have to thank you a thousand times for all of the information I have acquired from your magazine.

My IIe went from a basic system to one that has almost everything: two drives, a Thunderclock, a modem, a Gibson Light Pen System, color monitor, two printers, and 384K Ramworks card. My love for my IIe is never ending! I'm even one of those people that has Apple "goodies" all over my house. My Apple is absolutely the greatest thing ever invented!

When *A+* began running Macintosh articles, I just passed them by without a thought, but as the number of articles increased, so did my concern. Soon I was almost jumping up and down with complaints about all of the space in the magazine that was being wasted on the Mac. Being a loyal IIe fan, I felt the Mac was "taking over" the sacred IIe territory. I not only was totally happy with my "e," but a Macintosh was not even in the distant future for me. My computer was capable of doing all anyone could ever want to do.

OK, here I am about to eat my words. A Macintosh is not only in my future, but it is only a couple of weeks away from taking up residence right beside my IIe. After attending an Apple Macintosh show, I was hooked. A whole new world was opening up, and I was missing out on it. It took my husband and me only one 15-minute discussion to decide to buy our Fat Mac. Amazing! Now, the next most amazing part: I headed right to my issues of *A+* (all of them) and started digging out the ones that had coverage of the Macintosh. It took me about five days of constant study just to get through all of them. I can't thank you enough for all of the great articles on that computer. This seems ironic; *A+* was making me so *mad*!

Thought you would enjoy hearing about one person who was won over. Whenever you get more complaints about *A+* covering new territory, just send them a copy of my letter. Never say never!

One more comment about your magazine. It has been the only computer magazine brought into this house that is always read from cover to cover. When I first bought my computer, *A+* was one of the few that was easy to understand. Now that my IIe is my most treasured possession, your magazine is *still* the best. Your appeal seems to span all levels of knowledge; that is hard to do. There are so many magazines out now that are either too technical or too elementary for me. You certainly have what it takes to keep my subscription going. Thanks a million for a great magazine.

Thank you for your coverage on the Macintosh. Thank you for hanging in there when everyone was on your case about it. Someday they may be dusting off their old issues, just like I did!

Angie Little
Strictly Data
Irvine, CA

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CIRCLE 164 ON READER SERVICE CARD

STARFIRE SOLUTION

Dear *A+*,

I own a Corona Starfire 10-megabyte hard-disk drive. I am using it with an enhanced Apple IIe and Titan Accelerator IIe, among other boards. The Corona is compatible with DOS 3.3, Pascal, and CP/M.

Corona sold its Apple hard-disk technology to Rana Systems, and Corona no longer supports the Starfire. Rana Systems has gone out of business. I now find myself with no one to turn to for help. I wish to use the Starfire with the ProDOS operating system. I would like to know if anyone has a copy of the ProDOS driver for the Corona or Rana hard-disk drive that I may be able to purchase, or if there is someone who could write a driver for me.

I would appreciate any assistance your readers may offer.

S. Richard Ravich
138 Hammersmith
Danbury, CT 06811

BEYOND THE CALL OF DUTY

Dear *A+*,

I recently purchased a Paper Saver from Ferro Enterprises. It came in a standard mailer that should have been sufficient, but the Post Office was able to bend it, destroying the usefulness of the product. I wrote to the manufacturer, explaining the problem. The company sent me another one in a carton that even the Post Office couldn't destroy. I believe that people like this deserve to be recognized.

James M. Steven
Concord, CA

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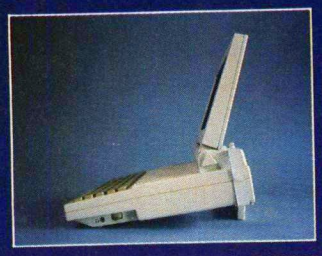

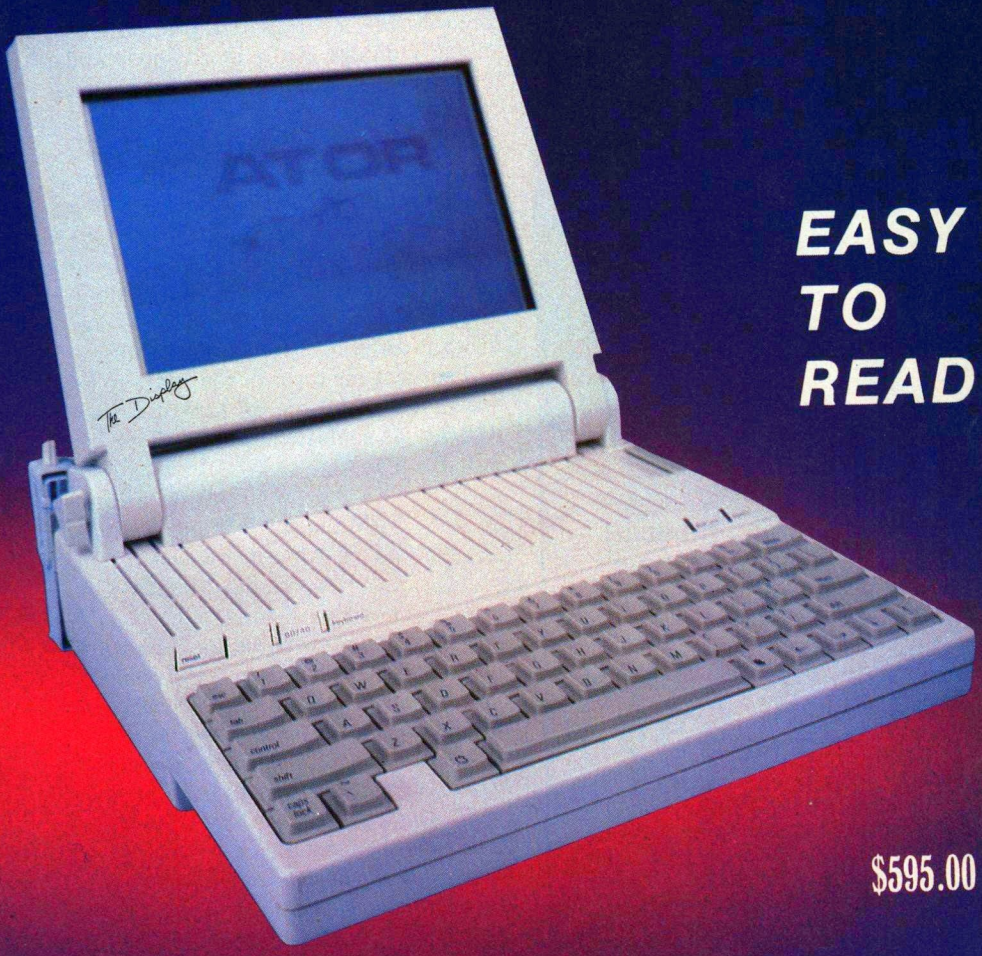

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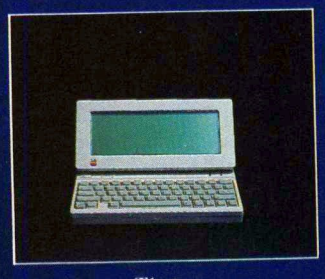
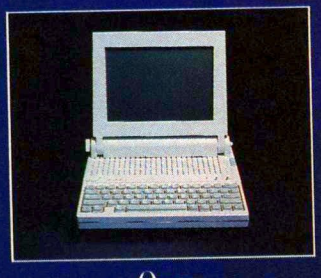


Theirs



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CIRCLE 310 ON READER SERVICE CARD

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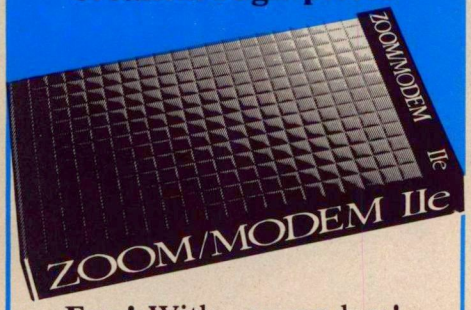

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PRINTER-SPEED DISCREPANCY

Dear *A+*,

I enjoyed reading the article "Dot-Matrix Printers" in the August issue (pages 26–36).

The specifications you cited for Citizen's MSP-10 dot-matrix printer, specifically 68 cps in the Draft mode and 23 cps in the NLQ mode, are incorrect, however.

As product manager for the MSP-10, I was involved in the cps tests conducted on the MSP-10 in both the Draft mode and the NLQ mode. Our repeated tests revealed the following numbers: 160 cps in the Draft mode and 40 cps in the NLQ mode—a significant difference from your results.

I suspect the error in your data to be one of computation, as I'm sure your tests are as sophisticated and thorough as Citizen's.

Jay A. Shears
Manager, Printer Products
Citizen American Corporation
Santa Monica, CA

Thank you for writing us regarding your concern about our testing methods. We test all hardware in-house. In the case of the dot-matrix printers, we took the actual "Dot-Matrix Printers" article, which was sent to each printer from Apple Writer in both the Near Letter Quality and Draft modes. Then we divided the number of characters by the printing time. All the printers tested below manufacturers' claims. Manufacturers' testing procedures usually measure the maximum output speed of the printer, which means that carriage returns, underlining, and advancing between pages are not taken into account. The discrepancy in the output rates is analogous to the difference between the EPA's estimated gas mileage and the actual mileage you get in a car.

—Editors

CUSTOM PRINT DRIVER

Dear *A+*,

I use AppleWorks in conjunction with DMP Utilities, so I have used the option of setting up a custom print driver. Since I need subscripts, superscripts, and underlining whenever I am typing mathematics, I filled in the codes for those options and replaced the boldface option with the codes to access the fonts stored in my Imagewriter. Since this method does not allow me to access as many fonts as the Imagewriter can hold, I set up another custom print driver that left the boldface feature intact and accessed fonts by replacing the subscript and superscript options, thus allowing me to access as many fonts as the Imagewriter can hold.

Apple supplied the following code sequences for use with the Imagewriter:

To turn subscripts on:

```
Esc 1 1 Esc T 1 2 Control-_1
```

To turn subscripts off:

```
Esc r Control -_1 Esc f
Esc A Esc 1 0
```

To turn superscripts on:

```
Esc 1 1 Esc T 1 2 Esc r Control-
_1
```

To turn superscripts off:

```
Esc f Control-_1 Esc A Esc 1 0
```

In entering the codes, you should distinguish between *1* and lowercase *l*; thus, the first code is Esc 1 (lower case *l*) followed by *1*. Also, you should distinguish between *O* and *0* as in Esc 1 (lowercase *l*) 0 (zero).

The use of DMP Utilities greatly facilitates the implementation of the printer options available on an Imagewriter (or Epson) printer, especially when combined with a word-processing program such as AppleWorks.

Yvonne M. Abhyankar
West Lafayette, IN

CORRECTIONS

Calling Thunderware . . .

In our August issue, we listed Thunderware's phone number incorrectly (page 141). The correct number is (415) 254-6581.

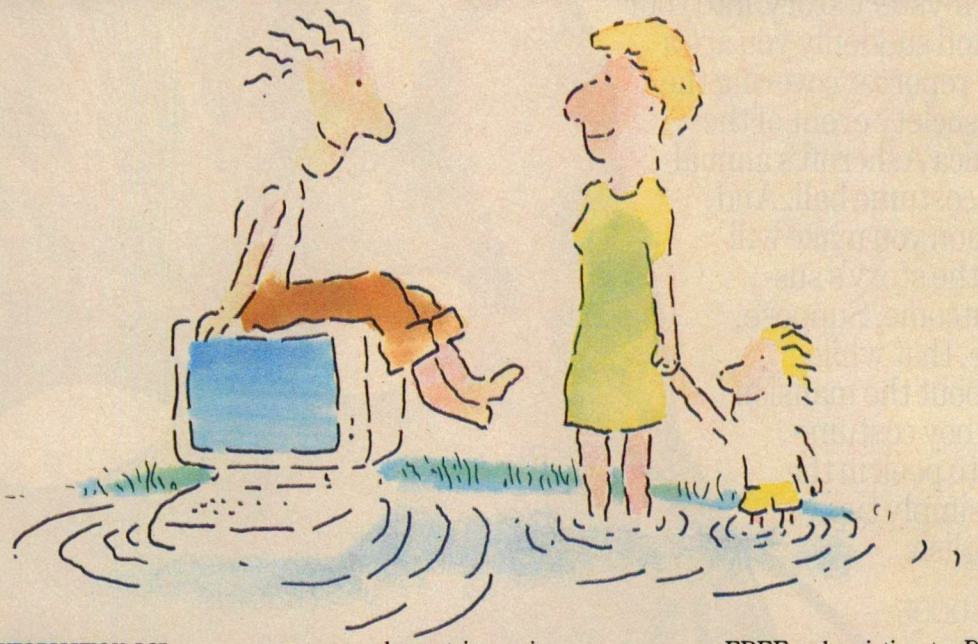
The Toshiba P1340 Printer

We inadvertently left out the Toshiba P1340 printer from our dot-matrix printer review, which ran in the August issue (pages 26–36), but we took a quick look at it for this correction. The P1340 is a solid, functional-looking dot-matrix printer. Like the other printers reviewed, the P1340 operates in both Draft and Near Letter Quality (NLQ) printing modes. According to the manufacturer, the P1340 prints 130 characters per second (cps) in the Draft mode and 47 cps in the NLQ mode. The dot matrix is composed of 24 dots vertically and 12–35 dots horizontally. The printer also emulates the Qume Sprint 5 daisy-wheel character set. It works with all Apple computers with some modifications and has both parallel and serial ports.

For more information contact Toshiba America, Inc., Information Systems Division, 2441 Michelle Drive, Tustin, CA 92680; (714) 730-5000.

CIRCLE 269 ON READER SERVICE CARD

GET YOUR FEET WET...



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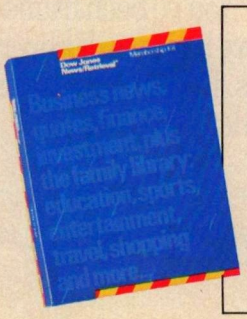

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-Brad Baldwin, *InfoWorld* Magazine

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The hostess of a lavish masquerade ball has just been brutally strangled.

Fortunately, there's a suspect. Unfortunately, it's you.

Just slip SUSPECT,™ Infocom's latest interactive mystery story, into your computer and suddenly you are a newspaper reporter covering the blue-blood society event of the year, Veronica Ashcroft's annual Halloween costume ball. And every decision you make will determine the story's suspenseful outcome. Suppose, for instance, that while snooping about the mansion in your cowboy costume you decide to peek in the office. You simply type, in plain English:

```
>OPEN THE DOOR
THEN ENTER
THE OFFICE
```

And the story responds:

```
YOU OPEN THE DOOR.
SLUMPED BEHIND THE
DESK IS THE BODY OF VERONICA
ASHCROFT. HER MASK HAS BEEN
PULLED OFF. AROUND HER NECK
IS THE AGENT OF DEATH, A
ROPE. IN FACT, IT'S YOUR
LARIAT, WHICH
YOU GOT TIRED
OF CARRYING
AROUND AND HUNG
IN THE CLOSET WITH
YOUR COAT.
```

You've been framed. And you have mere hours to discover who the real killer was. Because if you don't, you could be in serious trouble:

```
THE DETECTIVE GRABS YOU
FIRMLY BY THE WRIST, AND WITH
```

A PRACTICED TWIST, SLIPS THE CUFFS ON YOU. "YOU'RE UNDER ARREST FOR THE MURDER OF VERONICA ASHCROFT." SERGEANT DUFFY APPEARS AS THOUGH OUT OF NOWHERE AND ESCORTS YOU TO THE WAITING POLICE CAR.

SUSPECT gives you clues even before you flip on your trusty computer. Your invitation. A cryptic note on the back of a business card. An article torn from a magazine. A receipt for your rented costume. Even a guide to proper etiquette during a murder.

DAYS. HE'S GOT AN IN WITH THE REAL ESTATE BOARD AND HE'S TIGHT WITH VERONICA. HE'S RUINING MY BUSINESS!"

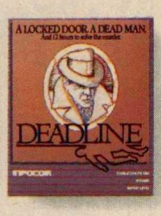
You communicate – and the story responds – in full sentences. Which means that at every turn you have literally thousands of alternatives. So if you decide it might be worthwhile, for example, to dance with Mrs. Ashcroft's corpse, you just say so:

>DANCE WITH VERONICA'S BODY

And the story responds:

YOU'LL HAVE TO LEAD, YOU CAN BE SURE OF THAT.

This masquerade ball is one bash where you'd better go easy at the bar. Because simply staying out of the slammer is a challenge that could send the soberest soul staggering.



Other interactive mystery stories from Infocom include The WITNESS,™ a 1930's style whodunit thriller in which a case of blackmail turns into murder before your eyes. And DEADLINE,™ which gives you just twelve hours to find the murderer, before he finds you.

You'll have to solve puzzle after puzzle as you build your case. You'll search for clues. Analyze evidence. Overhear conversations. You'll even question suspects:

>COCHRANE, TELL ME ABOUT SAMUEL OSTMANN

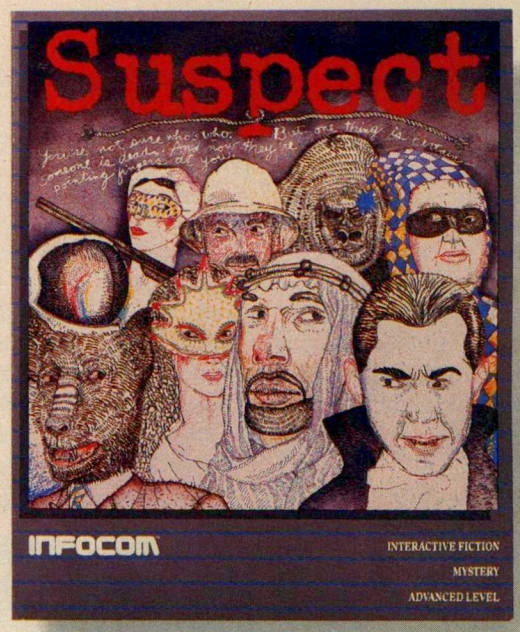
And the story responds:

COCHRANE IS UNSTEADY AND SWALLOWS A LITTLE MORE OF HIS DRINK BEFORE ANSWERING. "THAT SLIME! HE'LL GET WHAT'S COMING TO HIM ONE OF THESE

And if you're clever enough, then maybe, just maybe, you'll prove your own innocence. But you'll have to hurry.

So polish up your party manners and rush down to your local software store to pick up a SUSPECT today. And remember, the costume ball lasts from 8 to 12. But if you don't solve the mystery, you'll soon be doing 18 to 20. With no parole.

Still not convinced? Try our Sampler Disk which includes portions of four different types of stories for just $7.95. If it doesn't get you hooked on the addictive pleasures of Infocom, return it for a full refund. If it does, you can apply the price toward your first Infocom story. You can't lose!



INFOCOM™

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CIRCLE 225 ON READER SERVICE CARD

NEWS+

BY FREDERIC E. DAVIS

INFORMATION APPLIANCE

Jef Raskin, one of the original designers of the Macintosh, has put together a talented tech team in Palo Alto, California, under the name Information Appliance, Inc. The first product that Raskin's team has come up with is an innovative product for the Apple IIe called the SwyftCard that will retail for $89.95. The SwyftCard is a small, efficiently designed card that plugs into the usually unused slot 3 in an Apple IIe. When I first saw a SwyftCard, I wondered what a tiny card with only three chips could do.

My first mistake was to think of the SwyftCard as a hardware device. What the card really offers is easy-to-use word-processing, data-management, calculation, and communications software that runs faster than anything I've seen on an Apple II, Mac, or IBM PC. For example, searching a 40K file takes about 300 milliseconds, and formatting a blank disk and saving a file take only eight seconds together!

The SwyftCard software is far from run-of-the-mill and represents some advanced thinking about software design. For example, this is the first word-processing program I know of that doesn't use cursor keys or any cursor-pointing device such as a mouse. Instead, the Find command relocates the cursor. This technique may sound strange, but it works much better than the traditional arrow-labeled cursor keys.

Because the SwyftCard is actually a ROM (read-only memory) card, the lightning-fast software on the card is available without the need for a program diskette, which means you can turn on the Apple and have the program start immediately. The SwyftCard is such a hot product that we're already fighting over who gets to use it.

The SwyftCard proves that a lot more power is left to squeeze from the Apple II line. We'll be reviewing this great new product in an upcoming issue of *A+*. If you can't wait till then, ask your local dealer for a demo or contact Information Appliance, Inc., 530 University Avenue, Palo Alto, CA 94301; (415) 328-5160.

HIGH-TECH HEADGEAR

Personics Corporation of Concord, Massachusetts, has introduced a new mouse substitute called the View Control System that you wear on your head like a pair of headphones. This new cursor-pointing device is based on the principle of "what you see is where you point." I admit a mouse that you wear on your head sounds pretty weird, but the device does work, and it doesn't take up the desk space that a mouse requires.

Industry reaction to the View Control System (VCS) is mixed. Some people feel that the VCS is a bit awkward and that it makes you look silly when you're wearing it; others seem to have taken a liking to it. Former Apple maven and Mac designer Jef Raskin says, "When I tried it, I discovered that I would rather use the VCS than a mouse for pointing," which seems like a solid plug for the product. I'm not sure I'd like to be the first one in my office to wear this new high-tech headdress, though. If the idea sounds appealing to you, you can get more information from Personics Corporation, 2352 Main Street, Bldg. 2, Concord, MA; (617) 897-1575.

COLORMAC

The color Mac is here. It's not from Apple, and the price is hefty, but if you want color, have money, and can't wait until Apple gets it together, the Pixel Artist color Macintosh system may be just what you're looking for. The Pixel Artist is a graphics subsystem that plugs into one of the Mac's serial ports and connects to a standard external RGB color monitor. A MacPaint-like program on the Mac allows you to control the color image on the external monitor.

For further details, call Tony Reynolds, Dunn Instruments, 544 Second Street, San Francisco, CA 94107; (415) 957-1600.

ASHTON-TATE'S MAC DATABASE

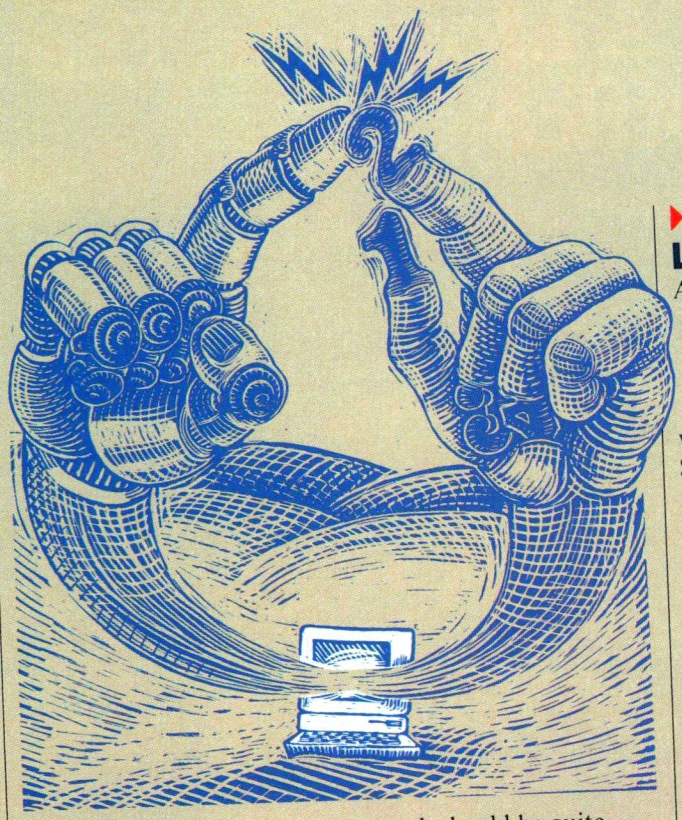
Ashton-Tate, the company that created the popular dBASE II and III database programs, is planning to release a database product for the Macintosh sometime in the near future. Although the company has not made any official announcements, Ashton-Tate has purchased the rights to an as-yet-unnamed database for the Mac created by Digicorp, a

publicly held software company in Salt Lake City, Utah. The Digicorp product will give Ashton-Tate a quick way to get into the Macintosh market.

SPECIAL EDUCATION

Last summer Apple gave away more than a million dollars' worth of Apple II computers to the Easter Seals charity. Now, in a move to strengthen the company's commitment to disabled children and adults, Apple has created a new Office of Special Education Programs. Apple will be working with a range of educational, advocacy, and human-services organizations to find the most appropriate ways to help meet the needs of the disabled.

"Special education is not bound by age or by setting; it can take place in the home, in a medical setting, and in various community-based programs as well." says Dr. Alan Brightman, author of numerous books for and about disabled children and adults, and director of Apple's Office of Special Education Programs. According to Dr. Brightman, "Wherever disabled individuals are learning, Apple wants to help them perform to their highest potential. That idea is at the core of our special-education agenda." For more information, you can contact Dr. Brightman at Apple Computer, Inc., Office of Special Education Programs, 20525 Mariani Avenue, Cupertino, CA 95014; (408) 973-6484.



AI MEETS ACCOUNTING

Artificial intelligence—or AI, as it is called in the trade—is one of the hottest areas of discussion among software developers right now. Layered, Inc., the producer of the Front Desk office-scheduling software we reviewed in our June issue, has a new accounting series under development that combines AI with accounting for small businesses.

Up until now, accounting software has focused on the task of number processing; you enter financial data into the computer, and the accounting software prepares reports that represent your company's general ledger, accounts payable, accounts receivable, and so on. The new Layered software takes accounting into a new dimension by applying artificial-intelligence principles to the financial data to interpret the data and draw conclusions about the company's finances. This approach should be quite useful to small businesspeople, who often don't know how to interpret a company's financial information. We'll be taking a closer look at this product in a future issue.

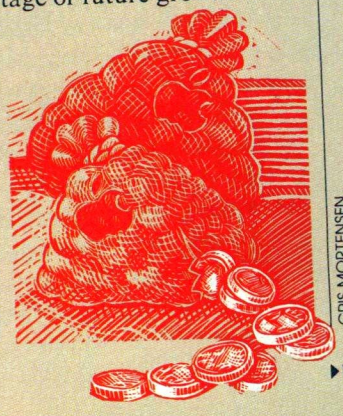
PFS:PROJECT?

Software Publishing Corporation, of PFS: fame, has recently acquired Harvard Software, Inc., of Littleton, Massachusetts. Harvard Software is the producer of the Harvard Project Manager and Total Project Manager, two programs that allow you to keep track of projects with the Critical Path Method (CPM) and Project Evaluation Review Techniques (PERT). Although Software Publishing has not yet finalized its plans for the new acquisitions, the purchase signals a move by Software Publishing into the high-end software market of more sophisticated and expensive programs.

APPLE'S FIRST LOSS

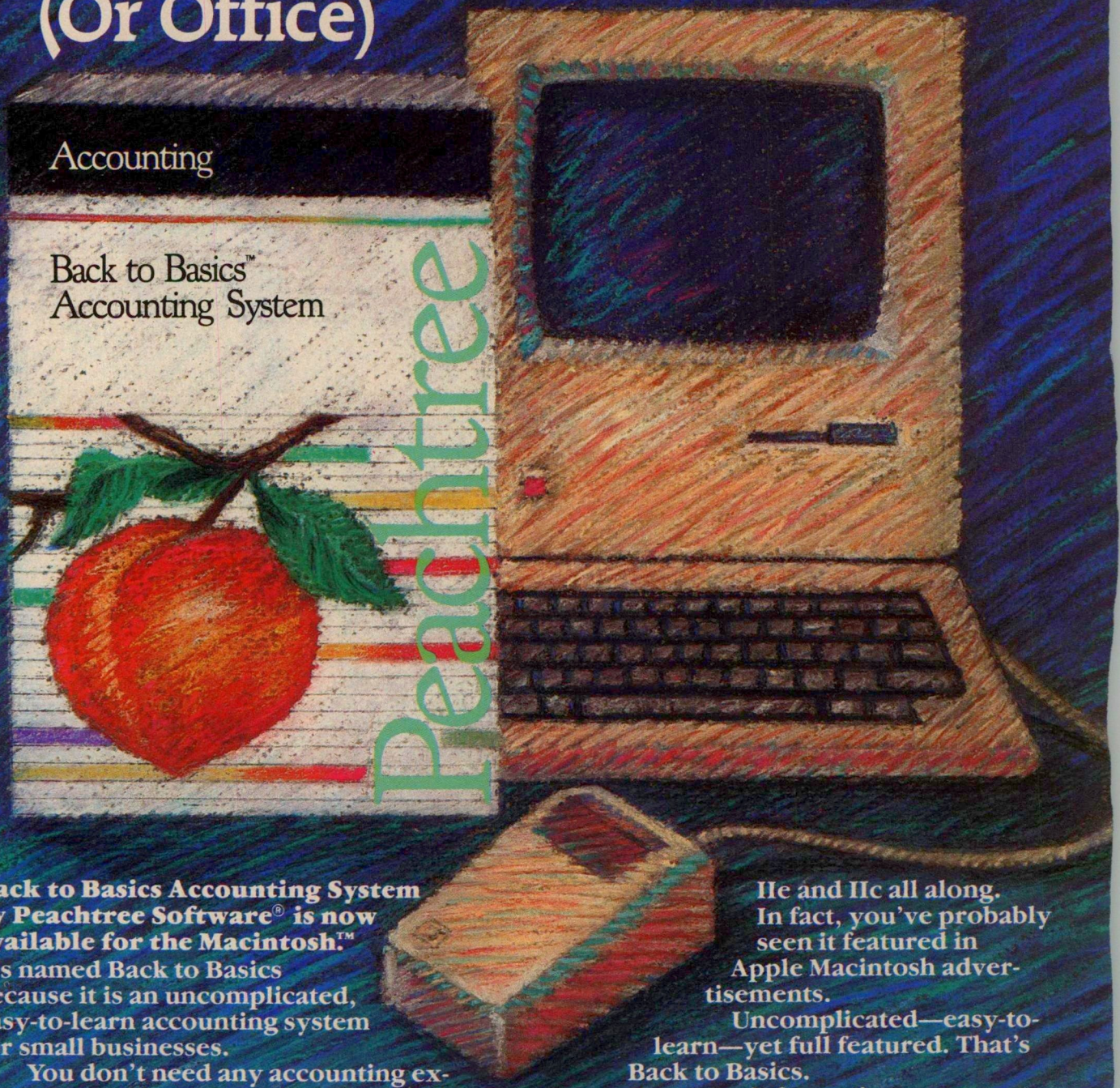
Apple Computer, Inc., reported its first quarterly loss during the third quarter of fiscal 1985. The loss amounted to $17.2 million, which works out to about $0.28 per share of stock. Apple is still operating at a profit of about $39 million for the first three quarters of the year, however, and sales are up 50% over those of the previous year. Apple actually made money during the third quarter but had to pay one-time expenses of more than $40 million to cover the cost of its reorganization, which merged the Apple II and Macintosh divisions.

The company is in very good financial health: Apple recently had a 39% market share of all computers sold at retail stores, compared to 31% for IBM. Also Apple has no debt, and its cash reserve of more than $250 million dollars means it can easily afford the $17 million loss. According to Apple president John Sculley, "We took major steps during the third quarter to meet the challenge of a slower industry . . . We are confident that Apple is well positioned to take advantage of future growth." +



CRIS MORTENSEN

Introducing Accounting For Those With A Mouse In The House. (Or Office)



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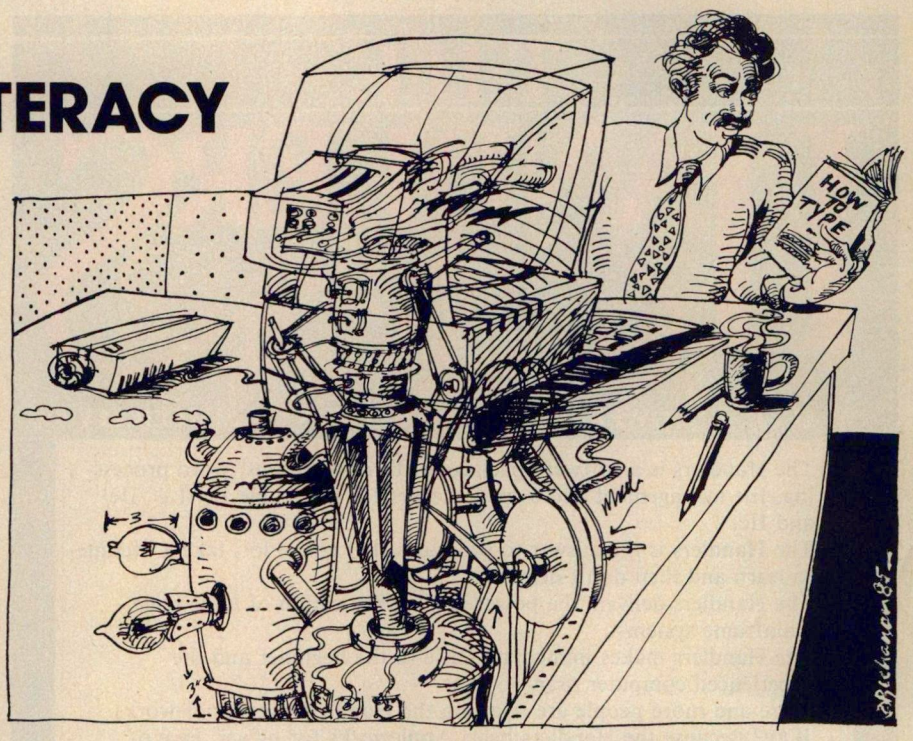
CIRCLE 318 ON READER SERVICE CARD

THOUGHTWARE
BY STEVE ROSENTHAL
How much do you really have to know to use a computer?

COMPUTER LITERACY



You don't have to know what a magneto is these days to be able to drive an automobile—and you don't have to know how to program anymore to be "computer literate." Millions of people drive cars without more than the haziest idea of what happens under the hood, and you can use a personal computer without knowing even the rudiments of solid-state physics.

Even people who say they don't know the first thing about cars except how to drive them have absorbed an enormous amount of general cultural knowledge about motorized transportation, however. Until computers become as ingrained in daily life and culture as the auto, computer literacy may still require some level of explicit study and experience.

Some of the components of computer literacy are operational skills, such as typing; others are attitudinal, such as an acceptance that values shown on a display are just as conclusive as those you see on paper; some are cultural, such as recognizing a computer menu and understanding what to do in response to it; and last, a few are philosophical, such as understanding the difference between data and information.

Skill and Overkill

The operational skills are the easiest part to define. For serious computer users, touch-typing will remain important. Even casual users will have to use keyboards and touch-screens. Disks will be with us for years; cables will have to be connected; and, because paper is not vanishing, we'll still have to know how to feed more into a printer.

Until more visually oriented computers such as the Macintosh became popular, it was assumed that all computer users would need to learn touch-typing, and it's still not a bad idea. Even with mice, voice input, light pens, and a host of alternative input devices, typing will remain one of the most useful ways to enter data into computerized systems for many years.

Basic keyboard fluency is important for touch-typists and non typists alike.

Fortunately, a computer is a good teacher for this particular skill. Dozens of good touch-typing-tutor programs are available for the Apple II family, and several good ones are out there for the Mac. Most people say that you're better off learning touch-typing early, but as long as you can use most of your ten fingers, it's always better now than later. Even in newsrooms, where fast two-finger keyboard operation has traditionally been the mark of a true hard-boiled reporter, ten-finger operation is replacing that old "machine-gun" style.

Basic keyboard fluency is not often recognized as a vital component in computer literacy, but it's important for touch-typists and nontypists alike. Even if you're entering data with the one-finger hunt-and-peck method, you still have to know that computers expect you to end a line of data with the Enter or Return key. Many programs expect you to know the difference between a destructive backspace and a left cursor movement (the first deletes characters as it moves left; the other merely relocates the typing position).

Now that the Macintosh has popularized the mouse, it's also becoming a basic skill for even casual computer users to understand how this pointing device works. Although its use may seem as natural to some folks as the Apple ads suggest, many people need a little

YVONNE BUCHANAN

practice before they can make the on-screen pointer go where they want. Even after most people learn simple mouse movements, it often takes a while before they can make the pointer hop around the screen with speed and precision.

The mouse and pointing interface have been the Mac's most visible contribution to computer culture, but, for better or worse, the Macintosh has also popularized a new way of thinking of disks. The disks you use on the Macintosh and on many other recent brands of computers are small and hardy and don't require much in the way of special handling. Thus, many users tend to become careless in their treatment of disks, at least until they lose an important file because of disk failure.

Disks, with or without protective shells, can still be erased if you leave them under a ringing telephone or ruined if they bake in a sealed automobile. With either three-inch or the more vulnerable five-inch disks, computer literacy means learning to think about magnetic fields and the habit of making backup copies. Just as you don't have to know combustion chemistry to know that gasoline is dangerous, you don't have to know about the magnetic properties of ferric-oxide coatings to learn how to safeguard disk data.

Cables and connections are another area that even the most casual computer user eventually has to learn about. Drivers can expect at some point to get a flat tire, and computer users can expect to ruin a cable or need a new one to connect up a different peripheral. It's a good idea to know how to change either.

For a computer expert, replacing or adding a cable may seem like a simple task, but unless you know something about electronics, mechanics, and geometry, it may be surprisingly difficult. Basic computer literacy, in this case, means knowing that you ought to have the power off before you hook up a disk drive. It means knowing that you can't just use a passive adapter to change from serial to parallel cable connections. It means remembering that with some types of cables, a little extra length doesn't matter, and that with others it can keep the system from running at all.

Computer literacy, as with many other kinds of expertise, is based in part on the tools and skills of the previous generation.

Printers, too, are virtually inescapable in the computer world. As the most mechanical of all the parts in most personal-computer systems, a printer takes a slightly different set of skills to operate. For people who aren't good with machines, learning how to start tractor-feed paper or replace cut-sheet cassettes may take some doing. Computer literacy, as with many other kinds of expertise, is based in part on the tools and skills of the previous generation.

Attitude Is in the Mind

Having the necessary skills is one part of becoming computer literate, but so is having certain attitudes. Although computers are still a long way from being directly influenced by human moods, you need to have an appropriate outlook to use computer hardware and software effectively.

For example, you have to be able to

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Controller Card for T40 by ComX	$ 79	$ 45

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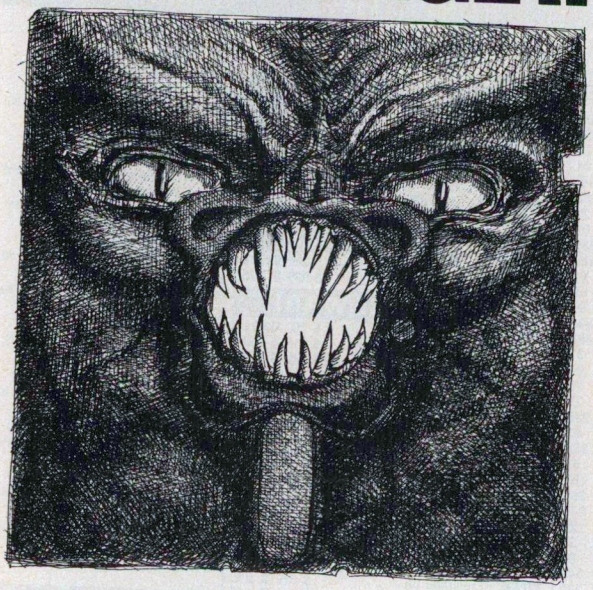

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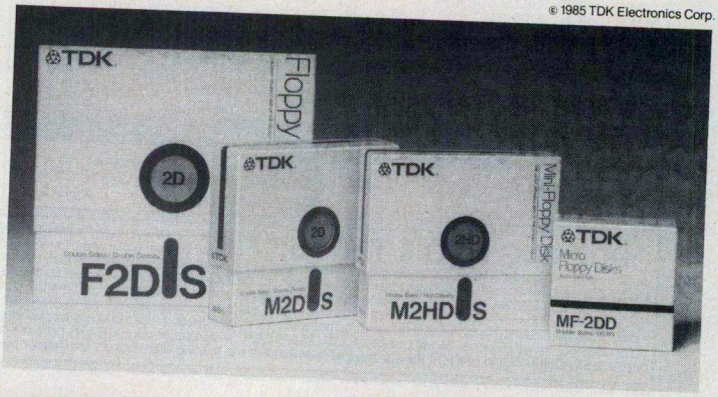

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accept the invisible and the evanescent. Results that are printed out on paper may be easier to take down the hall than the same numbers on a display screen, but they're not any more definite. Numbers that exist only in the computer are valid as long as the procedures that produced them are correct.

Many people, when they begin to work with a computer, tend to print out results at various intermediate stages just to make sure the data doesn't "go away." Although it is good operating practice to make periodic copies in case of hardware failure or procedural errors, paper copies are not inherently more reliable than machine-readable versions. Data can be erased or mangled on a computer at a speed possible only with electronics, but it doesn't happen purely at random. Taking care is a wise precaution, but not "trusting" the computer gets in the way of using it effectively.

On the other hand, not everything that comes out of a computer is correct. The data a computer produces is no better than the data that was fed in. In the case of paper-based procedures as well as computer operations, it's a good idea to check the logic and the flow of the information, as well as the quality of the input. Once people are computer literate, they no longer assume that a result is necessarily true or false just because it came out of a computer.

Many computer users must also work to develop the continuing recognition that a computer is a type of machine. This requirement may seem strange, given that Apple and many other firms have been working so hard to make computers more humanlike and less mechanistic, but it's all the more necessary as computers become more advanced and powerful.

If you talk to computer beginners right after they have a problem with a computer or its software, you'll probably notice immediately that they rarely can tell you exactly what happened. Yet without this information, no one can easily pinpoint either the cause or the solution. The tendency to think of computers as having human moods and whims gets in the way of learning to control the interaction to get the computer to do what you want.

A further corollary to the animistic view of computers is the conscious or unconscious belief that computers can be cajoled, threatened, and rewarded. Especially because it's hard to grasp at first what makes a procedure work and what makes it fail, we tend to fall prey

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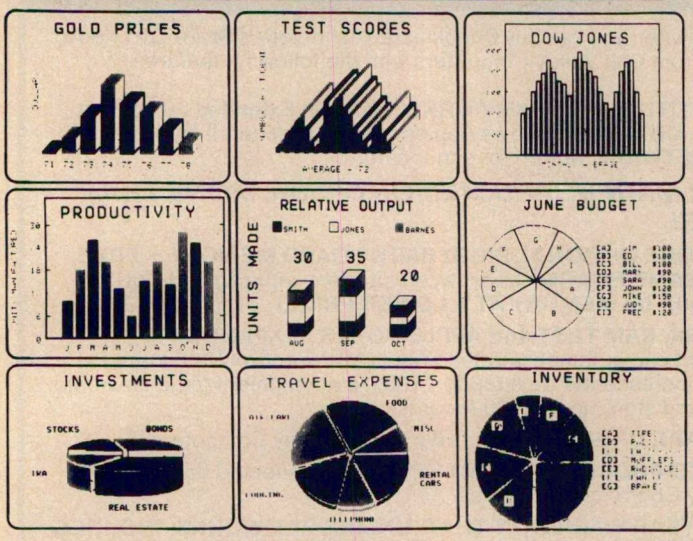
AlphaChart!



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"The software does much more than the advertisement suggests. Without question, this is among the best buys in software that I have ever come across, and certainly among the best written. It is extraordinarily easy to use, very well thought out, and priced to kill your competition (which I wish you every success in doing)." **Anthony J. Scriffignano, North Caldwell, New Jersey.**

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to the natural human tendency to rely on portents and magic. If you don't understand why your database sometimes works and sometimes does not, you're likely to spend a lot of energy hoping and even praying. There's nothing wrong with this approach per se, but it tends to get in the way of learning what the problem is and how to fix it.

The CRT Culture

Animistic thinking may get in the way of effectively using computers, but iconic and cultural/linguistic knowledge is a necessity. Most computer systems, particularly those of personal machines such as the Apple II or the Mac, assume that you recognize a whole range of objects, structures, and interactions.

For example, whether you're using AppleWorks on the II family or Excel on the Macintosh, you're expected to understand what a row and column of data represents. If

No computer program yet exists to tell a nation whether to go to war or a person when to fall in love.

you're given a menu of choices, you're expected to know that you have to choose a single one of the presented possibilities. The Mac expects you to recognize a trash can.

Similarly, after a while you learn the concept of having a point of action that may be different than the point where the system is accepting data—so it makes sense that typed material on the Mac appears at the I-beam location, while menus work according to the mouse pointer.

After you've been through enough different computer systems, many of these implicit assumptions seem at least familiar, if not always logical. If you've learned five word-processing programs, the sixth won't be a big conceptual leap, but until you pick up the references, you have to rely on explicit instructions and longer specific training.

Skills and attitudes count for most of the day-to-day requirements for using a computer, but long-term philosophical issues are also worth considering. Computer literacy, in the deeper sense, means knowing not only how to use a computer but also when. It means knowing not only how to get a printout, but also what to make of it. It means understanding not only the benefits of computers, but also their limits.

Until recent years, computers were almost exclusively used for processing numbers and simple lists. You knew what the data stood for, and the rules for putting the data together were rarely in debate. Now, though, advances in data representation and algorithms are leading to a whole new class of applications. You don't need to know the inner workings of an expert system or natural-language interface to be computer literate, but you do have to know that such things are available and evolving further. You also have to recognize that machines that draw conclusions or offer opinions are reflecting the way they have been programmed, as well as the data. Figuring out which approach is correct may be an experimental or philosophical question, rather than a technical one.

Despite all that, the most vital questions of personal development and social policy are not presently calculable by any known scientific means. You can be computer literate, but that won't help with the really crucial human choices. No computer program yet exists to tell a nation whether to go to war or a person when to fall in love. +

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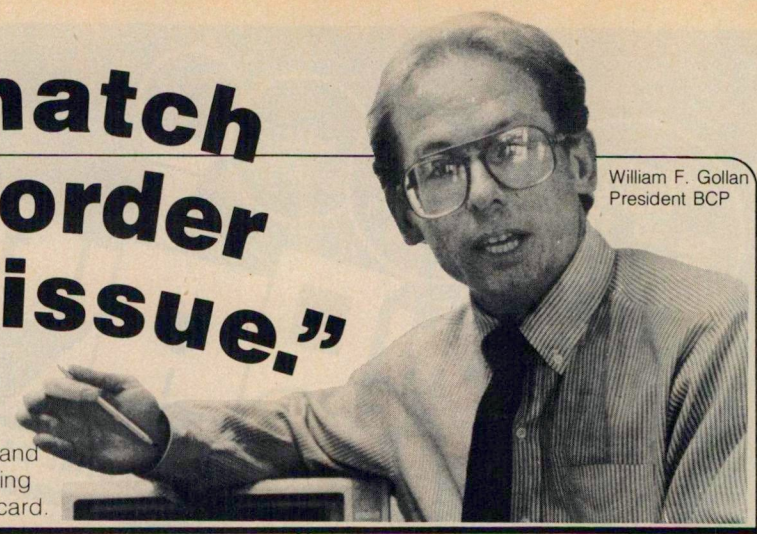

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HARD DISKS

▶ APPLEWORDS
BY STEVE ROSENTHAL

A short glossary of terms for use with "Catalyst IIe" on pages 95–100 in this issue

ACCESS TIME
In hard-disk specifications, the average time it takes for the disk drive to find and read from or write to any selected spot on the disk. Ordinary drives for Apple-class machines might have an access time of close to 100 milliseconds; drives meant for use as fileservers in networks connecting Apples generally have access times closer to 35 milliseconds or less.

BACKUP
For a hard disk, a means of saving a copy of data in case a hardware, program, or user error erases the disk. You can back up hard disks for Apples on floppy disks, but the process takes a while and uses a lot of disks. Better, but more costly, methods include using cassette tape, cartridge tape, or removable hard disks.

CRASH
To destroy the contents of a hard disk—or an incident that does just that. In the early days of hard disks, actual physical collisions that wrecked the recording surface (head crashes) were regular events, but they are now rare. A program bug can still overwrite files or the directory needed to find the files, however, making a disk unreadable.

DISK SERVER
A hard-disk drive that each station on a network can use to store and retrieve files. Unlike the more complex fileserver, a disk server doesn't allow network stations to share files. Apple plans to market a fileserver for AppleTalk.

EXTERNAL
Referring to hard disks, one that mounts outside a computer, usually in a box of its own that matches the computer's styling. The box often has its own power supply so the hard disk won't need power from the computer. Most hard disks for Apple computers are designed as external drives.

FILESERVER
A hard-disk drive that can store and retrieve files for the various computers connected to a network. Apple plans to market a fileserver for the AppleTalk network.

INTERNAL
Referring to hard disks, ones that mount inside a computer's case. So far, you can buy an internal disk for the Macintosh (the Hyperdrive), but you have to use an external drive for all other Apple computers.

PARTITION
To reserve an area on a hard disk for a program or operating system, or the area you reserve. When using most hard disks for the Apple II family, you can partition the disk into areas for DOS, ProDOS, Pascal, and CP/M.

PLATED
Disks that have been coated with a hard metal alloy instead of the more common iron-oxide material. Drives using plated media are still rare in the Apple world, but they should become more common because they're good for packing more data into smaller spaces and are better for portable use because the surface is harder.

PLATTER
The actual thin round disk on which a hard-disk drive stores data. Most drives for Apples that store ten megabytes or less use one or two platters; most that store larger amounts use more.

REMOVABLE DISK
A type of hard-disk drive where the disk itself is constructed as a cartridge that can be taken out of the drive. This kind of drive is relatively expensive but combines the speed and capacity of the hard disk with the floppy-like advantages of archival storage and relatively low cost for adding more disks. Several firms make removable-disk drives for both the Macintosh and the Apple II family.

SOFT ERROR
A temporary error in reading a disk that does not recur when the disk is reread. Typically, the specifications of a hard disk meant for use with an Apple call for an error rate of not more than 1 soft error in 10^{10} reads, and even this one-in-ten-million read error will almost always be caught by the controller.

ST 506
Originally referring to the Seagate Technology model ST 506 hard-disk drive, the term is now used for the disk/controller interface popularized by that drive. Almost all hard-disk units used with Apples use a drive with an ST 506 interface, but the connection to the Apple II family or the Macintosh itself uses other connection standards.

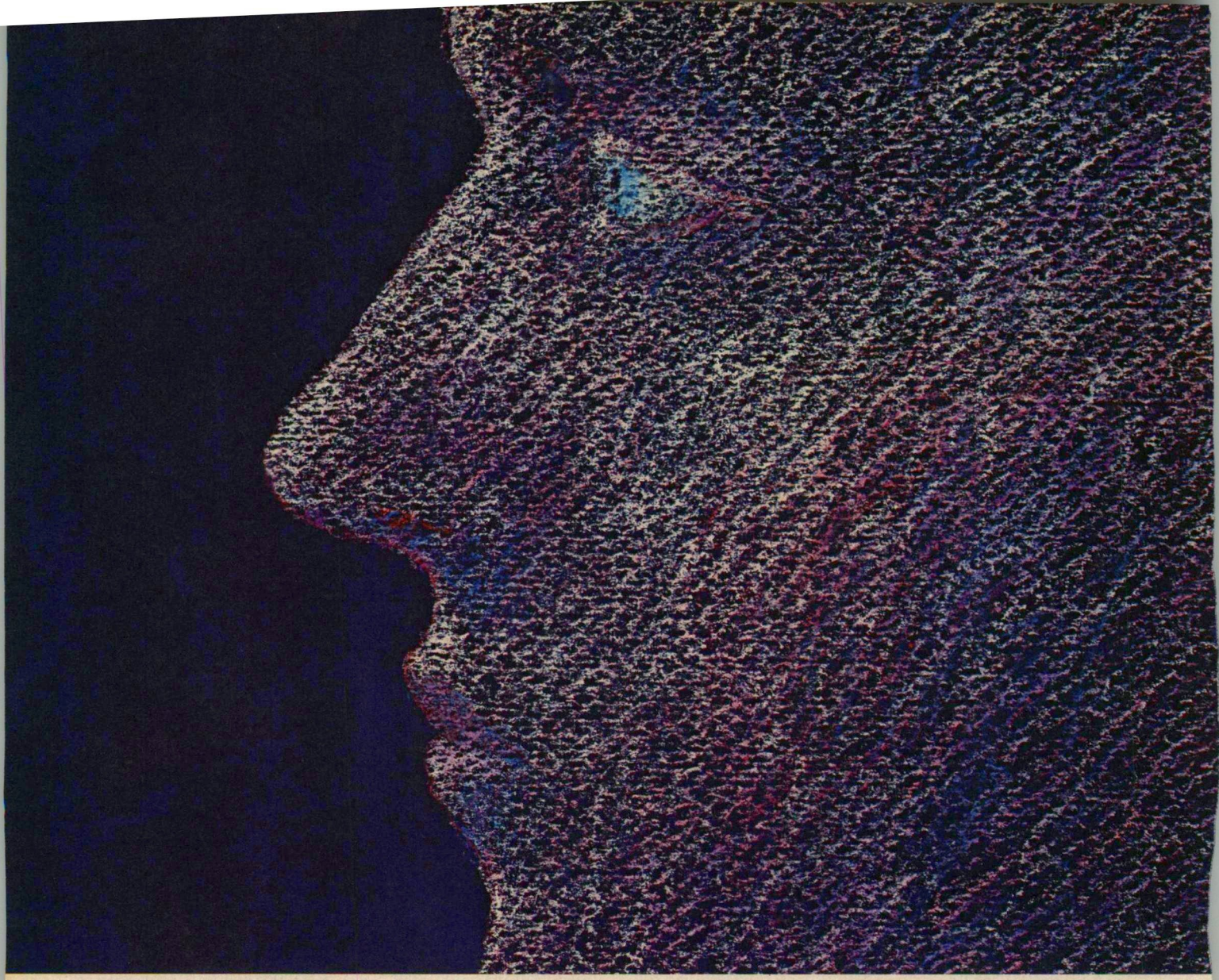
STEPPER
A type of disk drive that uses a motor that moves in fixed increments to push the read/write head in and out. Although they're not as fast as some other types, stepper drives are inexpensive, reliable, and proven in the field. Most hard disks for Apples are stepper types.

TRANSFER RATE
The rate at which information is passed to and from a disk drive. Standard hard disks can transfer data at five megabits (five million bits) per second, but external drives on the Macintosh can feed information in and out only at a slower rate.

VOICE-COIL
A type of hard-disk read/write mechanism that moves from track to track very quickly. It's likely to be used with some types of disks for Apple networks, but not for ordinary single-user hard disks for Apples.

VOLUME
A region on a hard disk with its own directory. Most hard disks for Apples allow you to break up the total space into smaller volumes, so you can more easily keep track of your files.

WINCHESTER
A disk technology first developed by IBM but now used for most small- and medium-capacity hard-disk drives for Apples and most other computers. This technology uses a read/write head that flies over the disk surface on a cushion of air but which lands on the disk surface when the drive starts and stops. Because the gap between head and disk is smaller than most dust particles, the head-and-disk assembly is kept in a sealed chamber full of filtered air or gas. +



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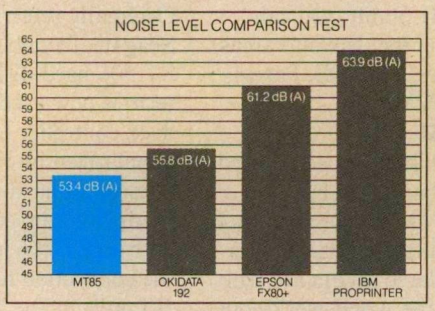

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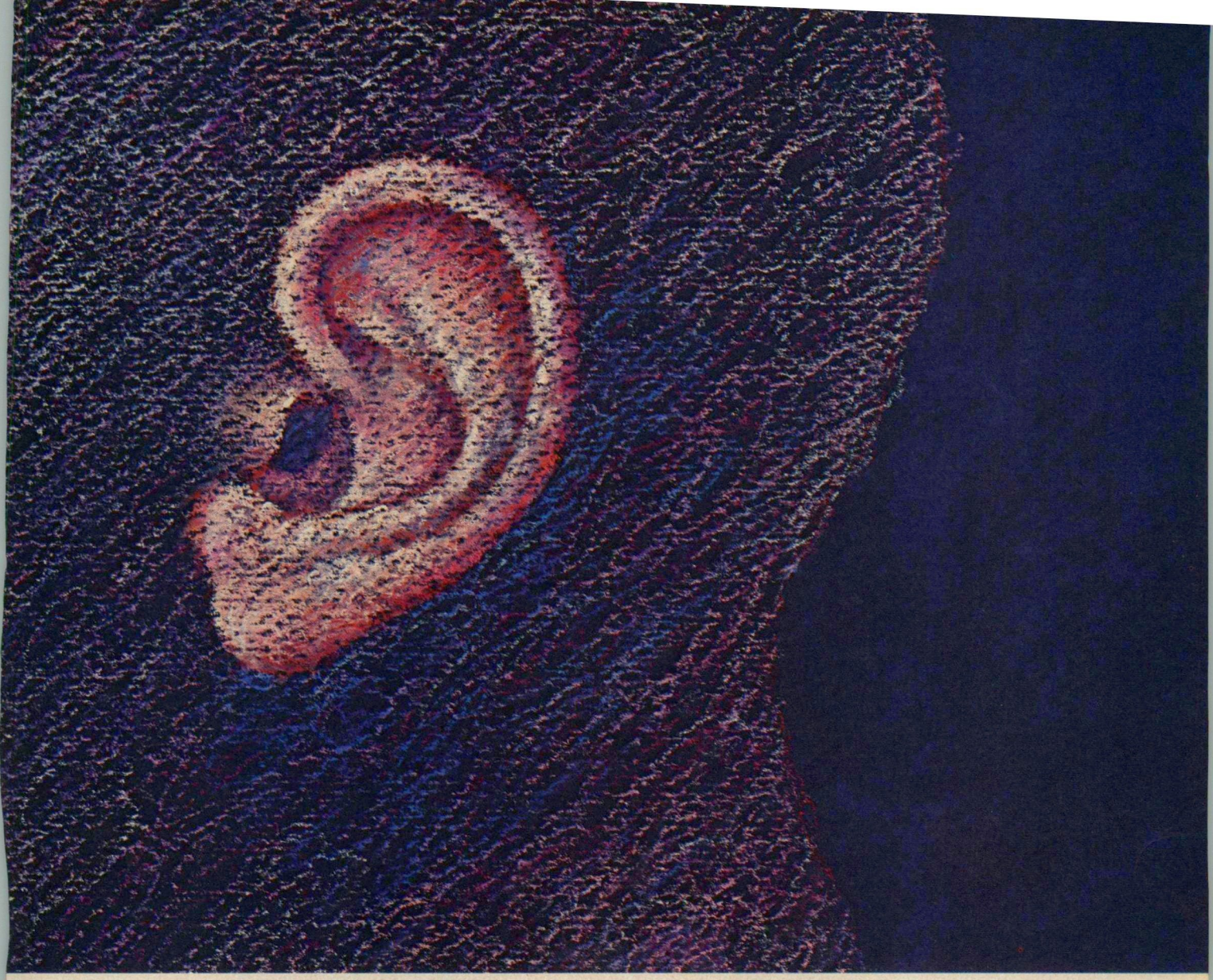

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CIRCLE 181 ON READER SERVICE CARD

EDUCATION
BY DAVID D. THORNBURG

A fast-changing field that presents special challenges to learners, teachers, and parents alike:

Computer ED

The Boiling Cauldron

The use of computers in education goes back many years, but it has been only in the last five years or so that this application of technology has become commonplace enough to receive nationwide attention. Unfortunately, the closer you look at this branch of computing, the more confused it seems.

We have all heard the story of the blind men and the elephant: One man felt the tail and said that the elephant was like a piece of rope, another felt the leg and said it was like a tree, and so on. From my perspective, this story is relevant to the impressions different people have regarding the use of computers in education, whether in the home or in the schools.

The educational-computer market means one thing to a manufacturer; another to an administrator; another to a teacher; another to a parent; and still another to the learner, for whom, presumably, the technology is being put to use in the first place. The variety of viewpoints regarding educational computing and the speed with which computers have been thrust into the educational setting have caused a great deal of confusion.

The Manufacturer's Perspective

From the manufacturer's perspective, the educational-computer market is a golden opportunity to make money. Education is big business, and the recent national focus on the state of our schools has made it easier for purveyors of educational hardware and software to get attention. If we're to judge from recent advertisements, our children will be incapable of surviving in society unless they use computers in their classrooms and homes. Among the more reprehensible examples of this approach to selling computers is a Commodore ad showing a young man rejected by a college, presumably because he hadn't had access to a Commodore 64 computer at home. This type of advertising may be an effective way to sell computers (guilt has helped sell encyclopedias for years), but the premise behind it is false.

Although proper access to computer technology can be of tremendous value to students of all ages, the interaction of student and teacher is what facilitates most learning. In this light, the computer is neutral—it is another educational tool, like a book. Whether this tool is used effectively or not is a human decision, one that not many people seem to know how to make.

Lack of access to a computer does not mean a child will get an inferior education. The human element in education is so strong that it overshadows any technology that students might have access to—be it the technology of books, blackboards, movie projectors, or computers.

I am not saying that all manufacturers are irresponsible in their attempts to sell equipment to the educational market—they are not. In fact, Apple's "Kids Can't Wait" program was an example of largesse that resulted in a complete computer system being donated to every school in California whose enrollment exceeded a certain limit. According to Apple Chairman Steve Jobs, this program would have been replicated nationwide, had a bill been passed to allow such a donation to be tax-deductible.

Although the Apple gift did have the effect of bringing computer access to children at all social and economic levels, it was not an act of pure altruism. What makes the institutional market so exciting to a computer manufacturer is that one machine reaches the families of 30 children. When parents come to visit a school, the classroom computer is one of the first tools they notice. Naturally, parents who want to buy a computer for home use will be strongly influenced by the computer that their child is using in the classroom, even if the child never brings any computer work home.

With a potential sales multiplier of 30 to 1, manufacturers are falling all over each other trying to buy their way into this market. Before other manufacturers rush to emulate Apple's giveaway program, however, they should know that some of these donated computers are gathering dust in schools because of a lack of teachers who know how to use this technology.

An Apple for the Teacher

If the educational computer is an opportunity for manufacturers, it is an opportunity for teachers as well. From the teachers' perspective, computers can have many uses. They can be instructional or record-keeping tools or simply provide a rewarding activity for children to share during the school day.

Because most teachers have had to learn about computing on their own, the effectiveness with which they use computers varies widely. Some teachers have been able to redesign their instructional day to take advantage of those things that computers can do well. Other teachers have fiercely resisted any contact with this technology. Most are looking for guidance and support as they try to use this tool for the benefit of their pupils.

Teachers are hearing many different messages, all being shouted at once. No wonder some have elected to wait a bit longer before incorporating computers into their curriculum. Unfortunately, those who don't play the game are missing their chance to influence the rules under which it will be played for the remainder of this decade.

Parents Care Too

If teachers are confused about the use of computers in education, at least they have several organizations and newsletters to help them keep up to date on developments and to share their concerns with others. Parents are not so fortunate.

It takes a highly motivated parent to

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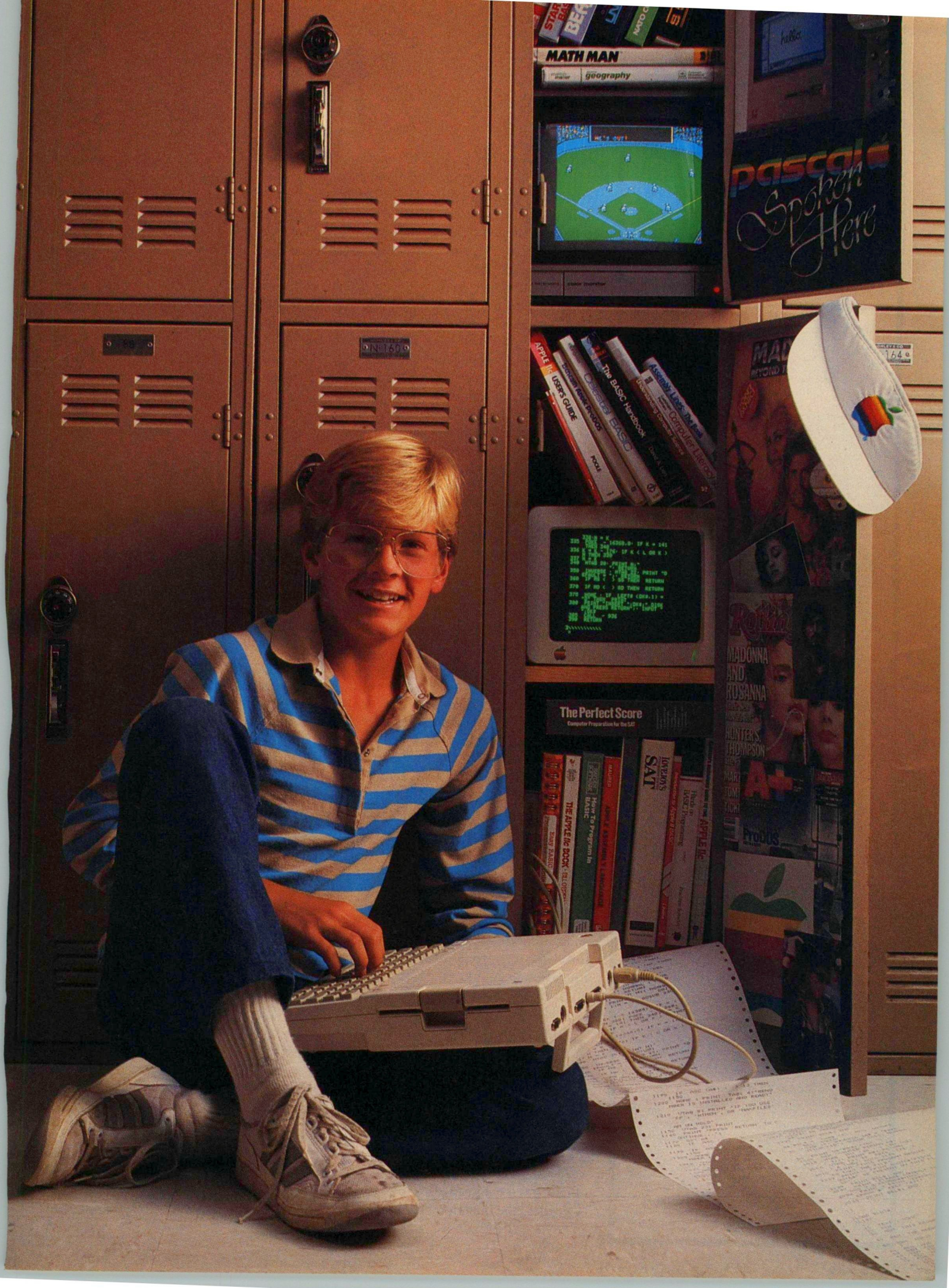
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CIRCLE 306 ON READER SERVICE CARD

Computer ED

wade through the morass of literature on educational computing in the hope of finding something that might benefit a child. In fact, most parents are likely to base their decisions on mass-market merchandising, flashy advertisements in the popular press, and the pitch of a high-pressure salesman who has some stock to clear out.

Parents who care about education don't have an easy time making good decisions in this area. For example, much of the software that children use in school may be inappropriate for home use. Also, many of the really good educational titles are unavailable at corner computer stores. Many stores seem to assume that the only software worth carrying features characters children see on Saturday-morning cartoons.

Yet, even though the odds seem to be against it, many parents have made excellent decisions in the purchase of educational materials for home use. Some have become so knowledgeable that they have helped their schools decide what equipment to buy and have helped train teachers themselves.

If you are a parent who has some expertise to share, bring it up at your next PTA meeting or class conference. You may end up helping a lot of children, not just your own.

What About the Kids?

From the perspective of the learners, the computer can be seen in several ways. Unlike their parents or teachers, most school-age children have never known a world without computer technology. Millions of youngsters are adept at using computer-based games, be they in the home or at the neighborhood arcade. As a result of this exposure to electronic technology, the educational computer doesn't seem as mysterious to children as it does to adults.

Not that educational computing doesn't present special challenges to learners—it does. To take just one example, let's look at typing skills.

In the old days before the advent of the personal computer, typing was taught in high school as a job skill to students (mostly girls) who, generally, were not going on to college. Once computers started showing up in the primary grades, the question became obvious: How could youngsters use computers if they couldn't type?

Several approaches to this problem have been tried. Some teachers have decided to live with it and have watched in agony as their charges hunt all over the keyboard for the right key to press. This approach can make a child miserable. I've heard of children who hum the alphabet song under their breath while looking for the right key. Needless to say, this method doesn't work with most computer keyboards.

Other teachers have started out the school year by having children learn to touch-type by using one of the myriad typing-tutor programs on the market. The motor skills of young children (especially boys) may not be well enough developed for this way of tackling the problem to make sense. Also, learning to type takes time away from the other things that children are supposed to be learning at this age.

A third approach is to start with an alphabetical keyboard, such as the Muppet Learning Keys, or to use software that uses a touch tablet, joystick, or other nonkeyboard input device appropriate for the skill level of the users.

No matter which tack is taken, educational computing presents special challenges to learners—especially in the primary grades.

Tutor, Tool, Tutee

Educational-computing expert Robert Taylor has divided educational computers into three categories: tutor, tool, and tutee. Here's an explanation:

When a computer is being used to deliver and test the acquisition of a specific piece of material, we can say that the computer is functioning as a tutor. Much commercial educational software falls into this category. Tutor programs range from simulations to drill and practice. Of the three categories, this type of software is easiest for teachers to incorporate into their classroom.

When a computer generates reports or performs data analysis in an experiment, it is functioning as a tool. The rich assortment of computational tools that have developed in the business market—word-processing, spreadsheet, database, and graphics programs—are starting to find wide use in classrooms at all grade levels. In fact, manufactur-

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Steve Wozniak,
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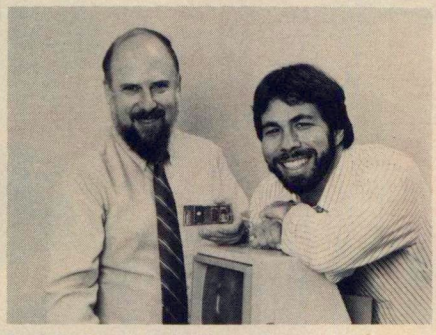
Steve Wozniak calls it revolutionary, adding "If I had thought of the SwyftCard while creating the Apple II, I would have built it in." Fomenting revolutions comes naturally to SwyftCard inventor Jef Raskin, whose previous efforts to make computers simple and useful include creating the Macintosh™ project at Apple.



SwyftCard creator Jef Raskin and Apple II creator Steve Wozniak

SwyftCard transforms the Apple IIe into the computer it ought to be.

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How much faster is SwyftCard?

From a power-off start, SwyftCard loads a universe and displays exactly where you were last working in just six seconds, automatically, with no commands.

SwyftCard finds and displays any piece of information in your universe in less than 300 milliseconds.

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How much easier is SwyftCard?

For all it does, SwyftCard uses only seven commands. And each is available immediately by pressing a single key once.

To start using SwyftCard, simply plug the card into Slot 3 (which most other cards can't use), turn the Apple IIe power on, wait six seconds and begin typing.

To use an Apple program, just load it in; SwyftCard turns itself off and won't interfere.

How much more does SwyftCard do?

SwyftCard communicates with data services without you having to learn their editors, and lets you directly edit information you bring in without special commands or file transfers.

SwyftCard is great with numbers, performing calculations — including scientific work — anywhere in your universe.

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SwyftCard is not a spreadsheet, nor will it do everything for everybody. But no other system delivers the common sense utility of SwyftCard.

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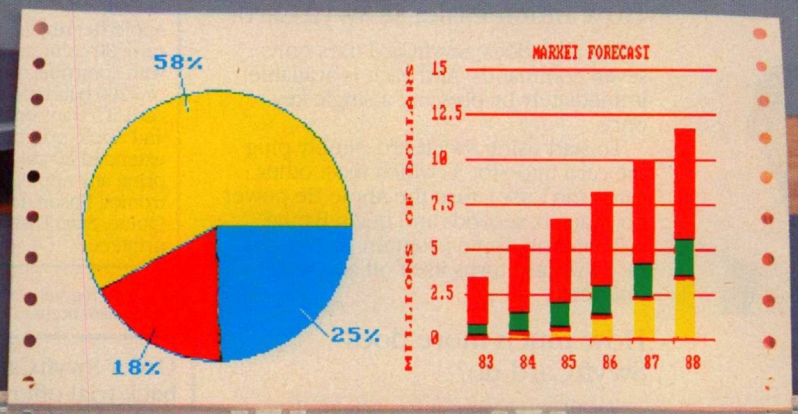

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ers have made some of these products easier to use, in order to make them accessible to as wide a market as possible. AppleWorks is a fine example of a set of programs that can function as well in the home and classroom as it can in the office. The only limitation on the use of a computer as a tool is one of access. It is hard to require that each child in a class generate reports with a word-processing program if the room has only one computer.

When a child is creating programs, the computer has become the "tutee." As MIT professor Seymour Papert says, "The child is programming the computer rather than having the computer program the child." Of all the areas of educational computer use, this one is the most controversial. Some argue that a child who learns to create programs with a powerful computer language such as Logo is also developing good strategies for problem solving, both at and away from the computer. Others feel that teaching children to program is a waste of time, since the languages they use may bear little relationship to the ones they may encounter years later in the "real" world.

Most educators agree that students should be introduced to a programming language somewhere along the educational path, although there is less agreement about which language they should learn.

If educators are looking for guidance, they are starting to find it from their state governments. Since I discuss this topic in my regular column this month, I won't say any more on this subject here, except to argue that what we really need is more freedom to explore and develop the ways computers can be used, not to restrict their use at this time to fit state-mandated guidelines. We simply don't know enough yet to do that job properly.

Just because it may not be appropriate for the state to watch over computer use in the classroom, this doesn't mean that parents shouldn't have a voice in the matter. Parents are in the strongest position to influence their children's attitudes and success in school, and they should never be discouraged from keeping up with what their children are doing, especially if they have computers at home.

Children who have access to computers in their homes can have an advantage over those who don't, which can show up in subtle ways. For example, a student who has access to word processing has an advantage over one who does not. The child with the word-processing program can edit and revise material with far greater ease than one who has to create every fresh draft from scratch with a pen or typewriter. Of course, access to word processing will not help children who don't express ideas well or who haven't studied the material well enough to write about it in a clear and coherent fashion.

Computerphobic Teachers

Just as children who have access to computers may be at an advantage in one respect, they may be at a disadvantage in another. Believe it or not, some teachers think that word-processing programs actually create text on their own and have thus forbidden any of their students to use these tools. Any child who turns in a paper that has been printed on a dot-matrix printer is suspected of having had the computer serve as a ghostwriter. How I wish it could happen that way!

On a lighter note, widespread access to computers may someday change the way assignments are given. I once heard of a child who was upset because her report was only 4½ pages long, even though the assignment specified a full 5 pages. Her father read the report, saw that it was both concise and complete, and then helped his daughter solve her problem by suggesting that she print out a fresh copy with slightly narrower margins. The final draft was exactly five pages, and everyone was happy.

Although the home use of computers as a glorified typewriter is appropriate for many learners, most parents have trouble finding other good pieces of educational software for their children to use. Many of the programs that schools use are designed to hold a child's attention for only a short period of time, after which the learner moves on to another activity. Many parents have made the mistake of spending money to purchase a highly recommended piece of software, only to find that their child quickly becomes bored with it. If educational software could be

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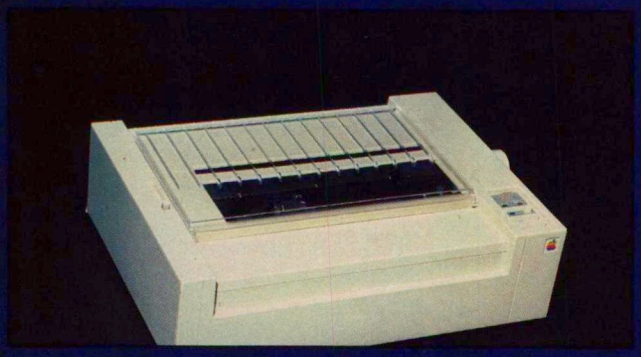

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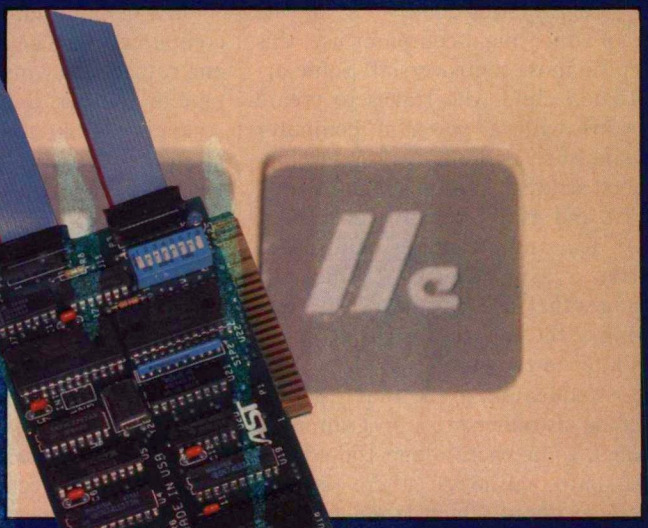

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Computer ED

checked out from local libraries, this problem wouldn't be so bad, but generally it can't be. Thus, parents are stuck with a $50 investment that ends up on the shelf after an hour.

Another potential danger that can come from pushing the relationship between children and computers is that too much emphasis will be placed on the technology of learning, rather than on the content. A child learns in many ways and needs exposure to many types of interaction: playing with friends; reading books; drawing; and, most important, having unstructured time.

All of us parents have high hopes for our children, and we all recognize the importance of a good education in our society. We have to be careful, though, not to slip over the boundary between being parents who are genuinely supportive of our children's educational progress, on the one hand, and pushing academic excellence at the expense of other aspects of their development, on the other.

Don't let the glamour of the home computer accidentally deprive your youngster of a full and rewarding childhood. We all go through childhood at one time or another, and I think it is best if we are children when we do it.

Picking Software

These concerns aside, many excellent educational programs are available that can be of interest and benefit for children. If your child has special needs, you may find software packages that can supplement classroom activities. You should check with your child's teacher to find out what his or her special needs are. If the teacher is familiar with educational programs, you may be able to get some specific advice.

Since all educational-software suppliers claim that their products are beneficial to children, you will find their advertising to be of little help. Therefore, you should look at program reviews in magazines to get an idea of what is available and how good it really is. A few books are out there that can help you choose software as well (see "References"). You may even be fortunate enough to live in an area where computer stores will let you try programs before you buy them.

The responsibility for the effective use of computers in education belongs to all of us—suppliers, parents, teachers, and students alike. Only as a result of a collective and concerted effort on all our parts will the true potential of the personal computer in education become a reality. ✚

Dr. David Thornburg has been active in the field of personal computers in education since 1978. He is the inventor of the KoalaPad touch tablet and is the principal designer of Muppet Learning Keys. He has written more than ten books on computing, many of which are of interest to educators.

▶ REFERENCES

Some magazines (such as *A+*!) have monthly columns devoted to the educational applications of computing. Several other magazines are devoted entirely to this topic. If you belong to an Apple users' group, you may find fellow members who are interested in this topic and who can share their experiences with you. The following references are recommended for those who are deeply interested in this field.

Books

Bork, Alfred, *Personal Computers in Education*, Harper and Row, 1985.

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Thornburg, David, *Exploring Logo without a Computer*, Addison-Wesley, 1984.

Turkle, Sherry, *The Second Self: Computers and the Human Spirit*, Simon and Schuster, 1984.

Organizations

Computer Using Educators, Inc., P.O. Box 18547, San Jose, CA 95158.

International Council for Computers in Education, University of Oregon, 1787 Agate St., Eugene, OR 97403.

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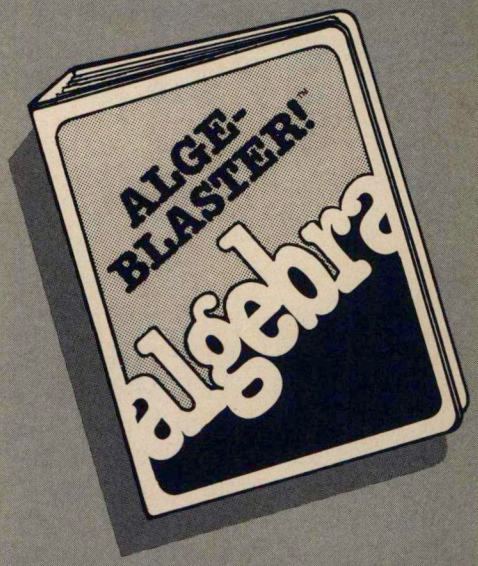

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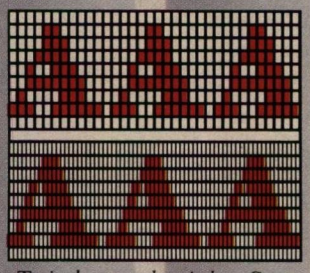

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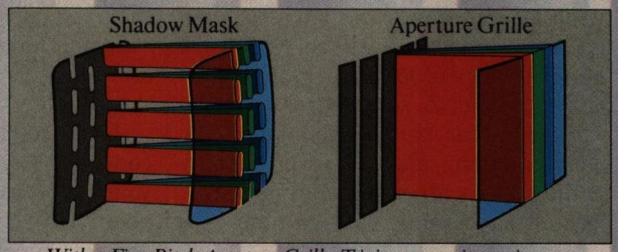

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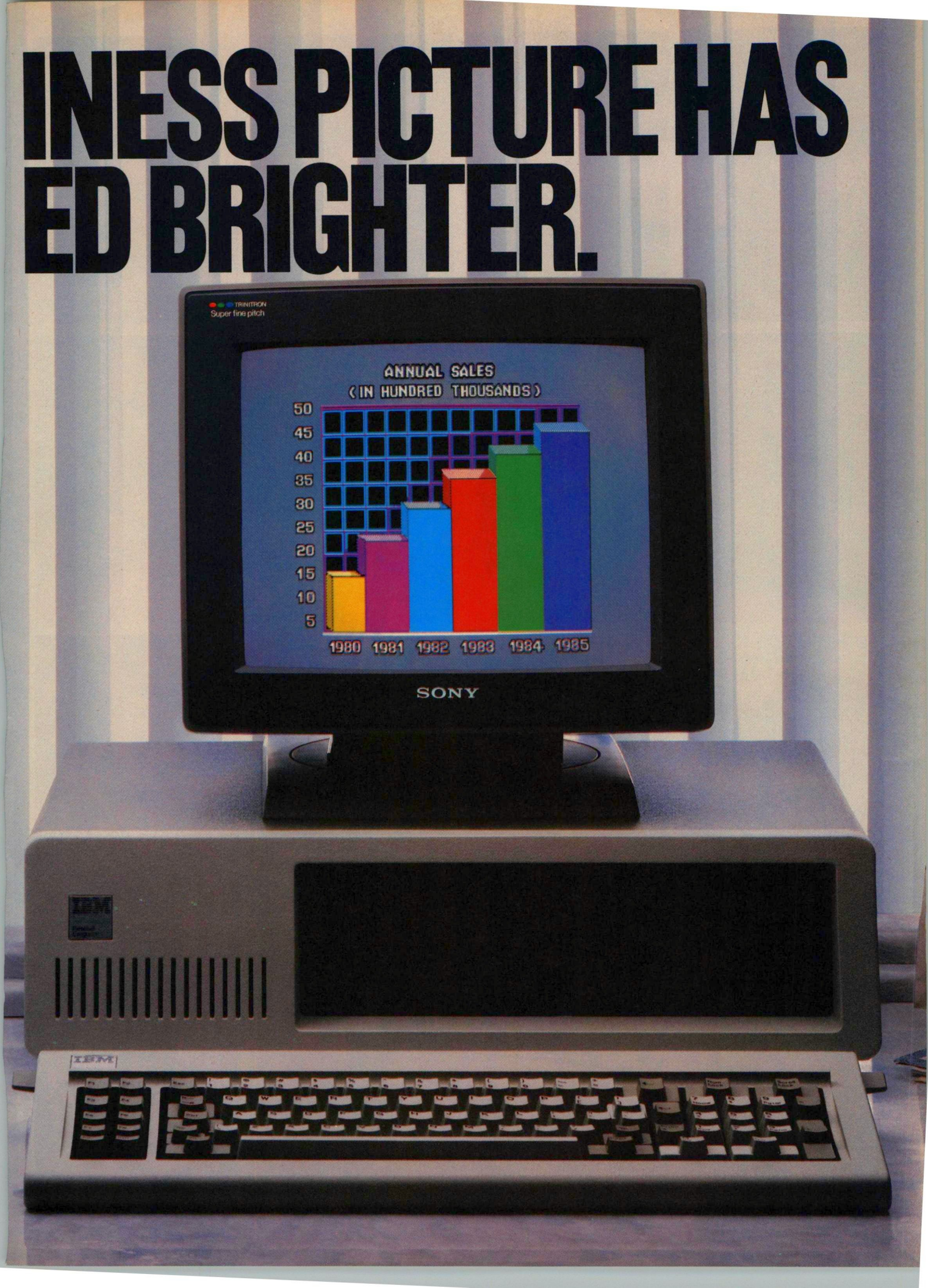

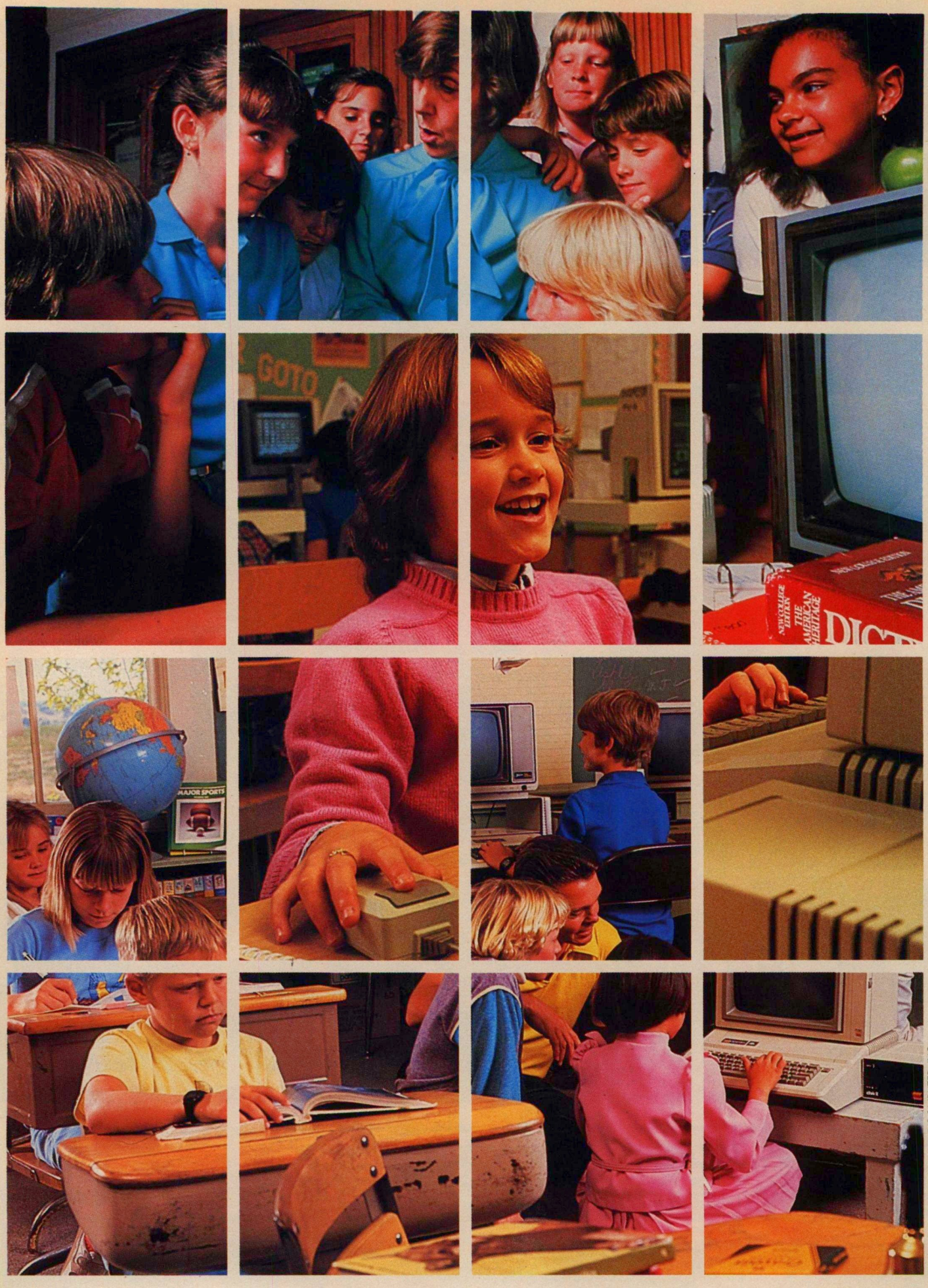

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▶ EDUCATION
BY GREG STONE

The parents' educational toolbox: Your everyday business software should be right on top.

Computer ED

Power to the Children

If you're like many parents, you bought your computer, at least in part, so it would help your child in school or college. If so, you're probably puzzled by the flood of educational software available for your Apple II or Macintosh.

You're not alone. Most professional educators I know are puzzled, too, and not just a little distressed. In the long run, though, it may not matter, because you possibly already own the most important educational software your child can use. It isn't labeled "educational," so you may be looking right past it.

I'm talking about word-processing, spreadsheet, and filing programs; computer languages; and similar functional tools that have proved themselves in the tough testing ground of the business and professional office.

The Child's in Charge

These tools differ in important ways from much software that bears the educational label. Such educational software usually tries to put the computer in the role of teacher. The programs demonstrate, cajole, drill, and quiz a student on a particular subject. In the best of this educational software—and it's often difficult to sort out the best—the child is drawn into meaningful learning activities.

Such programs also serve the basic goals of education in a more fundamental way. Instead of putting the computer in the role of drill instructor, they put the computer at the disposal of the child. The computer becomes a tool that empowers the child to accomplish something useful—whether that something is writing a theme, filing famous quotes for later reference, or calculating the batting averages of a Little League baseball team.

Word-Processing Programs

Let's look at one of these tools, word processing, from an educational perspective. Ample evidence exists that we are a society driven more and more by the need to communicate well. One of the most common means of communicating is writing, and a word-processing program is one of the best tools for improving poor writing.

Chances are you already own a word-processing program. Unless you find it particularly cumbersome, the program you are using should be fine for your child. Some programs, however, are especially easy to use or have other qualities that make them better choices for young children. One popular program for use in the schools is Bank Street Writer. Another program worth taking a serious look at for use with young children is Magic Slate. Both list for under $90, and several other word-processing programs that sell for less than $100 will also do the job.

For Apple II's, the features to look for in an inexpensive word-processing program for the home are ease of use; help screens; the ability to work with an 80-column card; the ability to delete and/or move blocks of type at one time; and boldfacing, underlining, centering, and double spacing between lines.

At this writing, two word-processing programs are available for the Macintosh—MacWrite and Microsoft Word.

Simple Projects First

If you ask children simply to "write something," chances are they'll sit and stare at the keys, just as most of us would do, given such a command. Wait until they have something they want to do—an assignment, for instance—and help them with it. (In the home, finding this opportune time to "strike while the iron is hot" is one of the real advantages we parents have.)

Give your children more experience with a word-processing program by encouraging them to express themselves in writing at every opportunity. Grandmother may love to hear Danny's voice, but she'll also appreciate a nice letter, and the letter has more staying power. She can reread it and show it to friends. It's also a chance for Danny to show off his new skill on the computer.

When it comes to learning new things, some people need to be left alone to discover on their own, and others need a highly structured environment. Some want all the mechanical details they can handle, and others just want to get down to business. What follows assumes the student has only mild interest in the computer itself and simply wants to get down to business. You will, of course, have to make adjustments for age differences.

Don't worry about typing skills. If students know how to type, great! If they don't, they can still benefit from a word-processing program. What's more, children under 12 may not have the basic motor skills to master touch-typing. My point is: Don't let the lack of typing skills keep your student away from the computer.

Try to give your children a successful experience from the outset. If they've never used a computer, don't take the time now to go through a recitation about disk drives, loading and saving files, RAM and ROM, and all the rest. Just sit them down with the program loaded and ready to fire. As I mentioned, do it when they're ready to write something.

Get them started with one simple instruction: Don't press the Return key at the end of a line. The first time they make a mistake, introduce the Backspace/Delete key. (I'm assuming your computer has a destructive backspace.)

This one action—deleting with the Backspace key—accounts for about 90% of the editing I do with a word-processing program. Naturally, you won't notice every error or know what changes you may want to make right away, and no one wants to backspace over and erase an entire paragraph just to change a word or correct a typographical error. Thus, it won't be long before it's time to introduce the cursor-movement keys.

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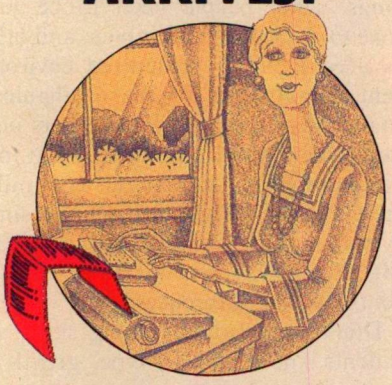

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The rule here is to keep it simple. Some programs provide cursor movement in various increments, such as words, sentences, paragraphs, pages, or even to the beginning or end of the text file. All of these increments may be handy to the person who uses the machine daily, but, for my money, only three are really necessary: cursor movement a character at a time, a line at a time, and to the end of the file. In the first lesson it's often difficult to grasp the concept of moving the cursor without erasing letters, so stick to just moving it a character at a time. If your student catches on fast, introduce moving a line at a time.

That's enough for the first lesson. Do all the saving, backing up, naming of files, and printing yourself. The student can watch, but it's not necessary to absorb all the fascinating details on the first round. (For students already familiar with the basics of computing, however, these procedures should be relatively simple.)

The Next Step

Bearing in mind that the best time to introduce the steps in the following list will vary with the age and interest of the students, here's a rough-and-ready guide to other topics. It really represents a priority listing of those aspects of word processing that I feel are important to a person using such a program in a personal or educational environment.

1. Backspace/delete, wraparound, cursor movement
2. Saving to disk, print formatting, and printing
3. Starting the program and proper disk handling
4. Deleting large blocks of unwanted text
5. Cutting text, moving it to a new location, and pasting it
6. Formatting input by setting margins and centering
7. Formatting input for boldface, italics, underlining, superscripts, and subscripts (or whatever options your word-processing program offers)
8. Headers, footers, and pagination
9. Global search and replace
10. Footnoting, glossaries, indexes, and other "bells and whistles"

Age Differences

With young children, avoid the disappointment of small returns. They are used to writing in large letters by hand. Writing a paragraph this way can take up a good deal of a sheet of paper for second graders. If they then type this same paragraph, it looks small on the screen and disappointingly small on the paper. So do whatever you can to make the type larger. Many dot-matrix printers, for example, can be made to print double width. With the Macintosh, you can simply choose a larger type size such as 18 or even 24 point.

> Some people need to be left alone to discover on their own, and others need a highly structured environment.

Magic Slate is one word-processing program for the Apple II series that takes this issue into consideration. It's designed to grow with the child. At the outset the child learns relatively few commands and works on a screen that's 20 columns wide and uses large letters. The 40-column version builds on what's learned and adds features. Finally, the 80-column version (it needs a IIe with an 80-column card or a IIc) adds some advanced features.

Older children may present other problems. I found that my daughters, who have been composing by hand through ten or more years of school, didn't want to compose on the computer. They wanted to write by hand first and then use the computer as a typewriter to make the final draft look nice. All they were getting from using the computer was an easy way to correct their typing, which is sort of like hitching a horse to the front of a car. For older children, learning to compose with a word-processing program can present a stumbling block, and I know no cure for it, except to encourage them to try it and see. They simply need a lit-

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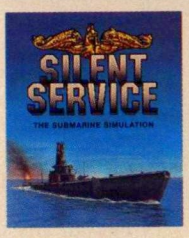

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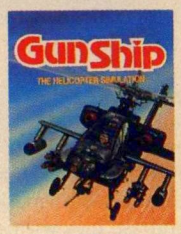

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Computer ED

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"Pac-Man," I said.

"Yeah," he said. "I can just back over these words and gobble them up." I suspect that children and grandparents catch on a lot faster than do some of us folks who are stuck between those two worlds. ✚

Greg Stone is a free-lance writer and director of community relations at Southeastern Massachusetts University. He has contributed to numerous science and computer magazines.

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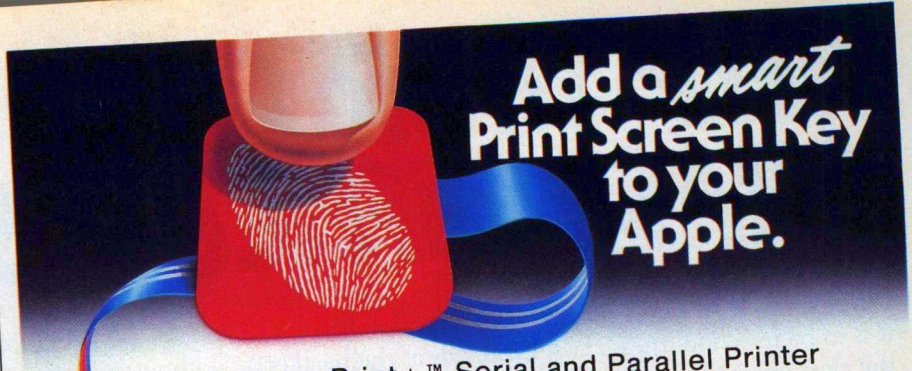

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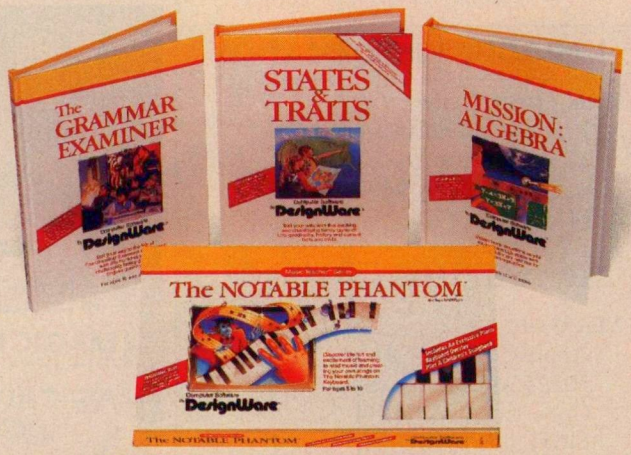

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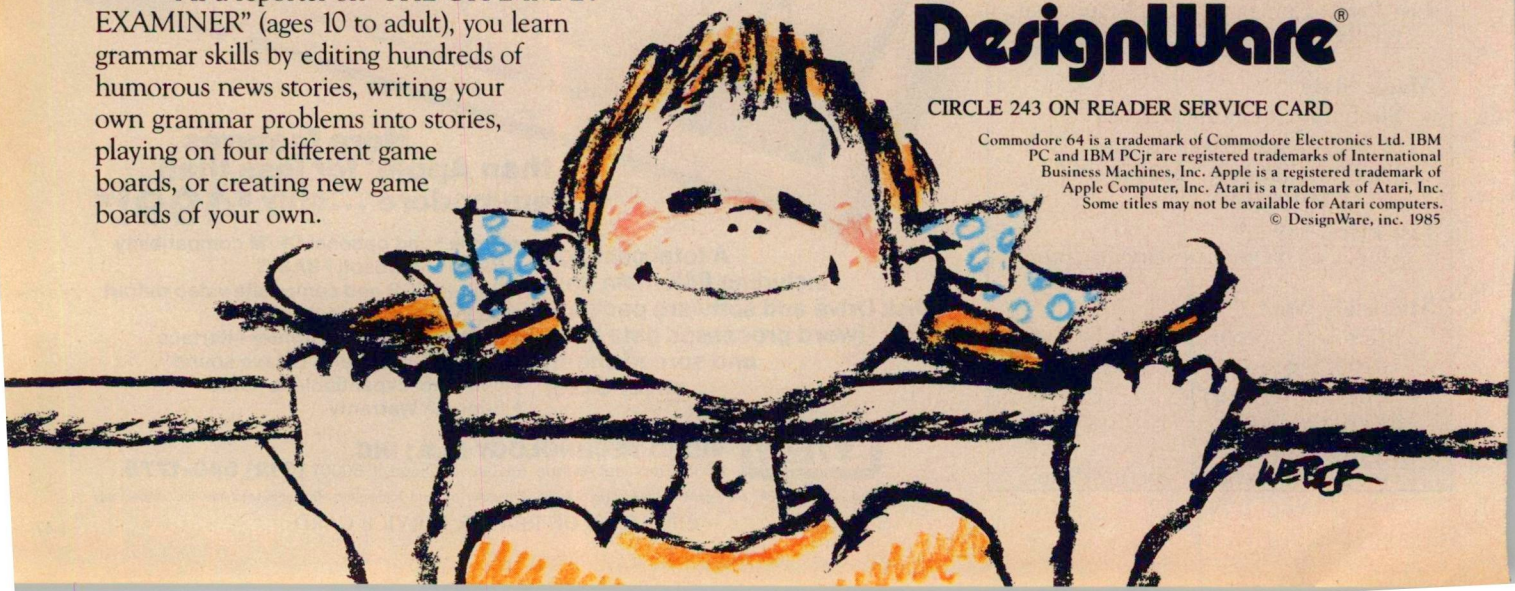

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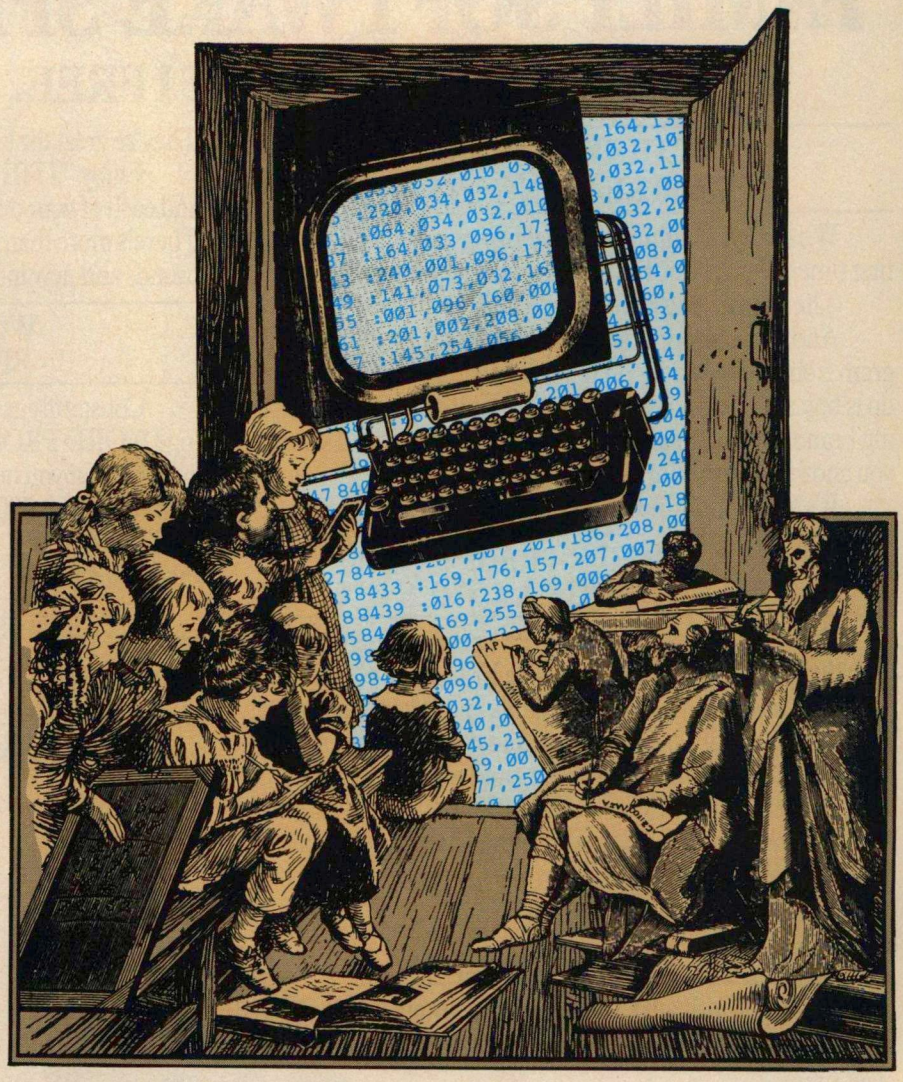

I have been asked to take on a most pleasurable task—that of writing a monthly column about the use of computers in education. Since this is my first article in this series, I think I should tell you a bit about myself and some of my feelings about the role of computers in the classroom.

The first thing you should know is that I enjoy hearing from you. I want this column to reflect your needs and interests, and I can focus on what you want only if I get letters from you. (Letters should be addressed to me care of *A+*.) The second thing you should know is that I have a tendency to say outrageous things from time to time. Sometimes my comments may make you mad, and other times you may find that we are in total agreement. Either way, I want to hear from you.

Education Is an Important Topic

A+'s decision to introduce a monthly column on education comes at a good time. Education is becoming an increasingly "hot" topic, receiving national attention in the news media nearly every day. I think our focus on the education of our young is appropriate, although I am not sure that we have a clear understanding of just what constitutes a *good* education.

Our future lies, more than ever before, in the minds of our students. As we progress further into the Information Age, it is the strength of our intellect that will determine the strength of our nation. This situation places increased importance on the quality of our education at a time when we are seeing schools and teachers coming under attack from many sides. Funding for education varies widely from state to state; teachers are grossly underpaid; well-intentioned civic groups are trying to change the system from the outside without displaying much of an understanding of just what it is that teachers do with their time.

Computers Can Be Misused

On top of all these pressures and turmoil, we have the penetration of personal computers into classrooms, often with little preparation for or thought about their use. Apple's well-publicized gift of an Apple IIe system to nearly every public school in the state of California has added to the already growing population of Apple products in classrooms, but my own spot-checks have shown that in quite a few schools this Apple gift is lying unused in a closet because no teacher in the school feels comfortable using it.

***A+* inaugurates a monthly column focusing on the use of computers in education.**

The presence of computers in the classroom is an important step; the critical issue is not the computers themselves, though, but the uses to which they are being put. School districts that understand this distinction have been quite successful in their incorporation of computers into the curriculum, although this success has brought pressures of its own. The first of these is the pressure for all computer-using educators to justify their use of this tool by achieving measurable improvement in student performance. The second is the pressure to create statewide adoption of the ways computers are to be used in the schools.

It's Too Soon for State Adoption

From my perspective, both of these pressures are inappropriate. The idea that we should have statewide adoption of a computer curriculum is ridiculous, given the newness of this technology.

WILLY KEATS

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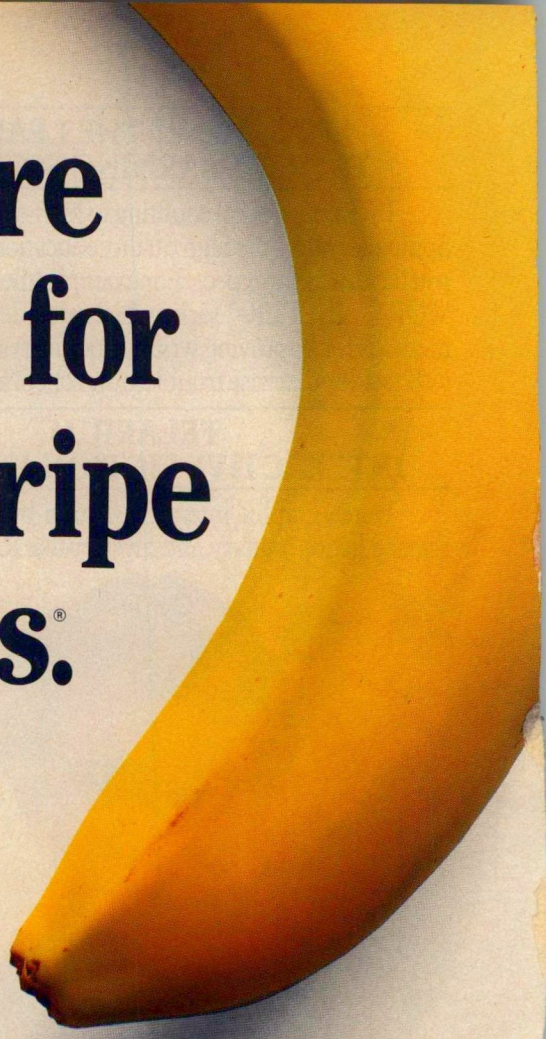

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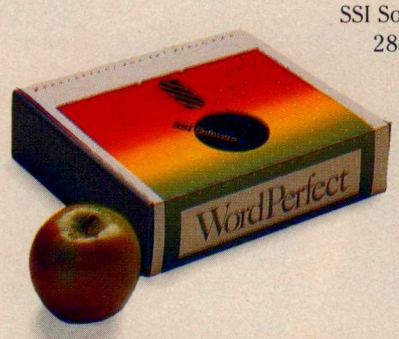

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CIRCLE 222 ON READER SERVICE CARD

Classroom computers are not yet commonplace, and schools that have been using this technology for three years are considered "pioneers" in the field. We have only begun to discover the myriad ways computers can be used in education, and to lock in on a curriculum at this point is to risk missing the truly beneficial computer uses that are just waiting to be discovered.

It is important that we remember that books didn't become standard tools in the classroom for hundreds of years after the invention of movable type. Although I am not suggesting we need to wait that long for standardization of computer use, I think it is still far too early to start worrying about this issue.

I believe we are on the brink of making new discoveries about education that will lead to the use of computers in ways we haven't yet imagined.

The desire to see quantifiable benefits from the use of computers may seem reasonable on the surface, but it ignores our students' access to computer technology in many other locations besides the classroom. The benefits that come from student access to computers come no matter where the computer is being used. Students who have computers at home are exposed to valuable educational tools, such as word-processing programs, at a very early age. To deny the rest of our students access to such an obviously useful tool until favorable "quantitative" studies are completed is silly.

The real problem in studying the impact of computers on education is trying to find a control group of students who have never had access to a computer. In our culture, doing so is virtually impossible today—especially in the communities close to the universities where much of this research is being carried out.

The critical test for computer use in the classroom has to be whether or not individual teachers find it useful. After all, not all teachers use videotapes or movies in their instruction, but this does not mean that these tools are bad. The computer should be thought of as just another tool, like the book, the blackboard, or the projector. If the computer is to be used effectively in the classroom, it will be because individual teachers have found ways to use computers to help students in ways that previously available tools couldn't help them.

Obviously, the fact that many schools are adding computer systems as fast as they can is an indicator that many teachers are finding the computer to be a powerful ally in the effort to provide the best educational opportunity possible to our students. The ways in which these computers are being used, though, are as diverse as the styles of the teachers who use them. I find this diversity fascinating, and I will focus on some of these styles of computer use in future columns.

Down with Drill and Kill!

As for my own biases (and I have quite a few), I am inclined to think of myself more as a facilitator than as a teacher, and this attitude is reflected in my choices for educational software. I am more interested in software that gives students the freedom to explore and develop their problem-solving skills on their own, rather than software that locks youngsters into a rigid sequence of activities that, for the most part, are better accomplished with a workbook. I am a proponent of discovery-based learning, and I am not a fan of software that functions as an electronic page turner.

Even this distinction makes a dangerous assumption, however—that we already know all the ways computers can be used in education. I believe we are on the brink of making new discoveries about education that will lead to the use of computers in ways we haven't yet imagined in our wildest dreams.

Each month, in this space, I will explore the topic of computers in education. This exploration will include overviews of significant software, interviews with interesting educators, explorations of the educational impact of new hardware, and speculations on what it all means from the learners' perspective.

As I said at the beginning, this is a most pleasurable task. ✚

Dr. David Thornburg has been active in the field of personal computers in education since 1978. He is the inventor of the KoalaPad touch tablet and is the principal designer of Muppet Learning Keys. He has written more than ten books on computing, many of which are of interest to educators.

[SEE PAGES 50 AND 51]

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PICK A

For letter-quality print, a field of daisy-wheel printers flowers. We survey 11 of the current crop.

For the last few months, we've been regaling you with printers that are colorful, versatile, quiet, and/or unique. Whether it's a plotter or an ink-jet or dot-matrix printer, each is better suited for some applications than for others. If you are looking for a printer that produces professional-looking textual material (reports, letters), then a daisy-wheel is probably in your future. This month we'll take a look at 11 of the many daisy-wheel (or letter-quality) printers that are available.

Grade-A Quality

The "beauty" of daisy-wheel printers is that they print text that is identical (or sometimes better) than text printed on the best typewriter. The "beast" of these printers is that they are extremely limited in their ability to print graphics. They achieve their excellent print quality for text by producing characters that are fully formed (solid). Each daisy-wheel printer carries its entire, fully formed set of characters on its daisy-wheel print element.

The daisy wheel is a flat, round element with spokes radiating out from the center (like petals on a daisy). On the end of each spoke is one fully formed character (letter, number, or symbol). To print, the daisy wheel rotates to the desired character, where a hammer strikes that character against the ribbon and onto the paper. Daisy wheels come in a wide range of typefaces (Pica, Elite, Gothic, Courier, and more), though few daisy wheels are interchangeable among different printers. We saw three different daisy-wheel sizes among the printers we looked at for this review. Make sure that the daisy wheels for your printer come in the typefaces you need.

Slow (and Noisy), but Sure

Because daisy-wheel printers must rotate the daisy wheel into position for every character it hammers against the paper, the printers are usually slower than most dot-matrix printers. The "hammering" makes daisy-wheel printers noisy (they make typing sounds), so you might consider investing in a sound cover. These accessories run $100 to

▶ HARDWARE/BY DAVID TOWNSLEY AND FRANCESCA VENNING-TOWNSLEY

DAISY

$500, but they will help save your sanity, especially in small working areas.

Although changing daisy wheels or ribbon cartridges on most printers is an easy snap-in process, you can rarely change the daisy wheel without having to remove the ribbon cartridge first. On many printers, you can change print pitch or select proportional spacing with the DIP switches. This flexibility is nice, except that you must turn most printers off and then on again to make the change effective, which erases any data in the print buffer.

In looking at each printer, we considered its noise level, its ease of use, and the speed with which it printed out this article.

Apple Letter Quality Printer

The Apple Letter Quality Printer is a good-sized and fast daisy-wheel printer. Although it was among the loudest and heaviest printers we worked with, it got the job done in less time than did most of the other printers in its price range. The Apple Letter Quality Printer printed out this article in seven minutes. A sound cover is a wise investment with this printer.

Surprisingly, the manual for the Apple Letter Quality Printer is very short, leaving you hungry for more. Nevertheless, the printer is extremely simple to operate and boasts one of the best speeds of all the printers reviewed here.

Brother HR-10 and HR-15XL

The Brother printers were among the quickest to get started with and the lightest (13 and 19 pounds, respectively) printers we had to lift. Both were apparently designed to make changing daisy wheels or ribbons easy and neat. The daisy wheel and ribbon each come in their own cartridge. In fact, you can change the daisy wheel without having to remove the ribbon cartridge first.

The Brother HR-10 comes with fewer features (e.g., no proportional spacing) and prints at a slower speed than the HR-15XL does, but the HR-10 has a standard tractor feed and even sports a built-in handle! The HR-10 printed this article in 25 minutes with a moderately loud typing sound.

The HR-15XL is about 50% faster than the HR-10 and has some extra-convenient features. The membrane-style buttons on the front panel are for choosing print pitch (10, 12, or 15 characters per inch [cpi], or proportional spacing) and line pitch (single, double, or 1.5 spacing) while the printer is online. In addition, the HR-15XL is one of the only printers we tested that does good continuous underlining with its standard daisy wheel in the Proportion-

DOW/CLEMENT PHOTOGRAPHY

COMPARING THE DAISY FIELD

PRINTER	PRICE	INTERFACE	STANDARD FONT	MAX. CHARS./ LINE	RATED CPS	BUFFER SIZE (BYTES)
AMDEK 5025	$899	PARALLEL	COURIER 10	204	20	2048
AMDEK 5055	$1995	PARALLEL AND SERIAL	COURIER 10	204	50	2048
APPLE LQP	$1195	SERIAL	PRESTIGE ELITE 12	198	40	256
BROTHER HR-10	$349	SERIAL	PRESTIGE PICA 10	80	12	2000
BROTHER HR-15XL	$599	PARALLEL OR SERIAL	PRESTIGE PICA 10	165	17	3000 OPT. 5K
DIABLO ADVANTAGE D25	$745	PARALLEL AND SERIAL	PICA 10	198	32	512
EPSON DX-10	$299	PARALLEL	COURIER 10	98	10	256
JUKI 6100	$658	PARALLEL OR SERIAL	COURIER 10	220	17	2000
JUKI 6300	$995	PARALLEL OR SERIAL	PRESTIGE ELITE 12	393	32	3000 MAX. 15K
QUME LETTERPRO 20	$899	PARALLEL OR SERIAL	COURIER 10	165	20	256
QUME SPRINT 11 PLUS	$1990	PARALLEL OR SERIAL	COURIER 10	198	55	500

al Spacing mode. The Copy key reprints what's in the printer's buffer, which can be handy if you're printing several copies of a one-page letter or document while your computer is occupied with something else.

The Brother HR-15XL also has ports on the back for interfacing with a keyboard and/or cut-sheet feeder (Brother offers both as options). The keyboard would be handy for typing something short (such as an envelope) on the printer while your computer is crunching away on something else. In fact, Brother is so confident you will like this keyboard option that the printer can work with a correction tape. If you want to be fancy, you can use a colored ribbon in place of the correction tape. Then you can program a color change, even in the middle of printing, without having to change your ribbon cartridges.

If the Brother printers have an Achilles heel, it is probably the curt documentation that accompanies them. Both manuals expend no extra words in teaching you the "bare bones" of setup and operation.

Juki's users' manuals are among the best we've seen yet from any printer manufacturer.

Juki 6100 and 6300

The first thing we noticed about the Juki printers wasn't the hardware. Being writers, we quickly flipped through the users' manuals and were immediately impressed. These manuals are among the best we've seen yet from any printer manufacturer, since the documentation provides plenty of interesting information for everyone—from beginners to experts. It even has sections on configuring the printers with WordStar 3.0 and 3.3, Apple Writer, and AppleWorks. An optional software package from Juki called LetterPrint lets the Macintosh use the 6100 and 6300 printers.

Both Juki printers are large, heavy (more than 25-pound) printers with colored membrane-style control buttons on the front panels. Their similarity to each other ends here—the ribbon cartridges and daisy wheels for the two printers are not even interchangeable.

The Juki 6100 printer comes with some handy features. You can choose print pitch (10, 12, or 15 cpi, or proportional spacing) from the front panel. Ruled horizontal tab markings on the included sound cover compare 10-, 12-, and 15-cpi spacings. An automatic paper-loading feature rolls paper sheets into the printer when you pull a lever forward.

The Juki 6100 printer has one weak point, in our opinion, and it is that you can't load the ribbon cartridge without getting your fingers dirty. Fortunately, you need not remove this ribbon to change daisy wheels. The 6100 printed this article in 15 minutes, while making its share of whirring, growling, and typing sounds.

The Juki 6300 boasts faster print

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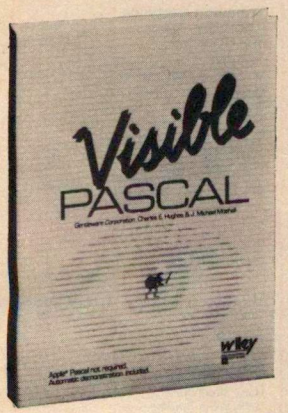

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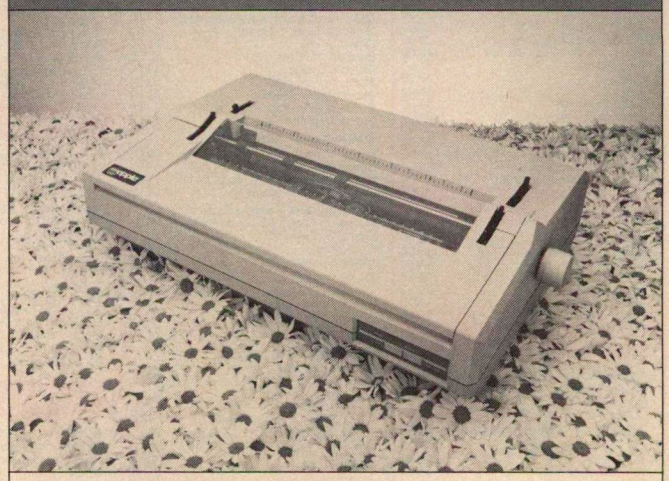

Speed: 35.4 cpi
Font: Prestige Elite 12

speed and a wider carriage than the 6100 does. The 6300 printed this article out in nine minutes. To make life a little easier, the 6300 uses a nonmessy ribbon cartridge and has none of the 6100's whirring, growling sounds. You do have to pull the ribbon cartridge out to change the daisy wheel, however. DIP switches on the 6300 let you select print pitch, hammer intensity (for carbon copies, for example) and even higher print quality (reducing ribbon life and print speed).

We were disappointed that the Juki 6300 lacks some of the handier features of the 6100. It has no front-panel selection for print pitch, no horizontal tab markings above the platen, and no automatic-load feature. Before we noticed the greater speed and width of the 6300, we mistook it for Juki's lower-end model. Still, the 6300 is one of the few printers for less than $1000 that offers a speed of 30 characters per second (cps) and accommodates paper up to 16 inches wide.

Epson DX-10

The Epson DX-10 is a new daisy-wheel printer that is simple to set up and operate. It has only three front-panel controls (On-Line, Form-Feed, and Line-Feed) and is easy to move around, thanks to its relatively small size and low weight. Although you can change the character pitch (10 or 12 cpi only) with the DIP switches, proportional spacing is not available. A plus for Epson's DX-10, as with all of Epson's printers, is the well-organized and readable users' manual.

On the negative side for the Epson DX-10 is its slower speed (23 minutes to print this article) and lack of a serial interface. Epson certainly gets a prize for specifying a print speed closer to our actual measurement (of 11 cps) than any other printer reviewed here! In addition, the suggested retail price of $299 is amazingly low for a daisy-wheel printer. Epson also offers a more-souped-up daisy-wheel printer, the DX-20, for $459.

Amdek 5025 and 5055

These two Amdek printers (they actually are Ricoh printers with Amdek nameplates) share identical front-panel controls, and each can print up to 204 small characters (15 cpi) on a line. This is one of the greater printing widths of any daisy-wheel printer we looked at (ideal for spreadsheets). The front panels give you the following controls: Form-Feed, Line-Feed, Reset, Pause, Top-of-Form Set. The manuals are great for playing 52-card pickup, since they are loose-leaf sheets with no binding (you should have a binder handy). They also have only the most minimal information.

The suggested retail price for the Epson DX-10 is amazingly low for a daisy-wheel printer.

The 5025's print speed of 15 minutes in our speed test was a little slow, considering its $899 price tag. The muffled noise level is worth noting. The ruled markings on the top include the three print pitches; 10, 12, and 15 cpi. The only way to change print pitches manually is by changing the daisy wheel, however, since the printer recognizes the pitch from the daisy wheel. Other-

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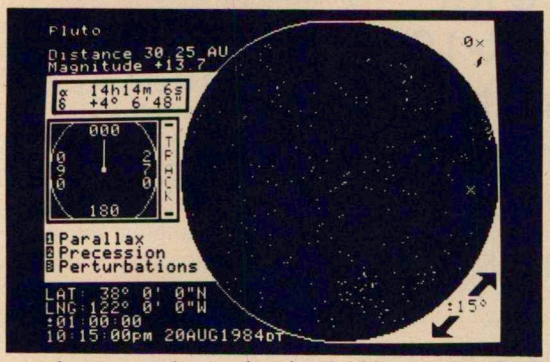

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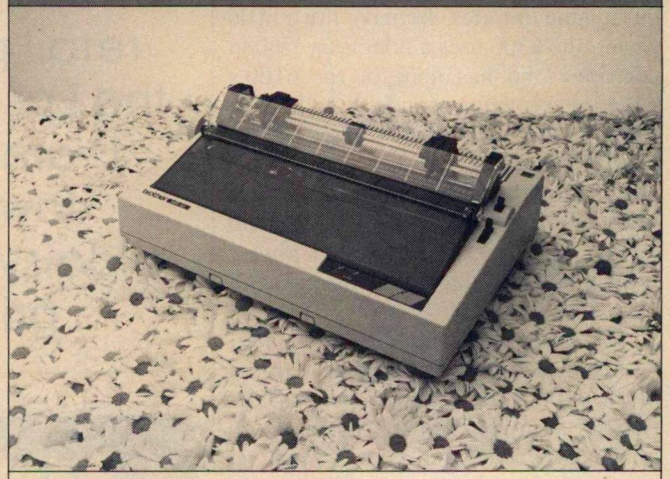

Speed: 10 cps
Font: Prestige Pica 10

BROTHER HR-15XL

Speed: 15 cps
Font: Prestige Pica 10

DIABLO ADVANTAGE D25

Speed: 19 cps
Font: Diablo Pica 10

wise, you or your word processor must send the necessary Escape code to the printer.

The Amdek 5055 zipped through this article in 6½ minutes and was a bit quieter (just a bit) than other printers this fast. This printer is obviously meant to stay put. It's so huge that we could have used some help from a weightlifter to get it out of the box. The 5055 stands about two inches taller than most other printers and shakes the table whenever it does a carriage return. Our advice is to make sure you have a reasonably sturdy table for it.

The internal fan in the 5055 is louder than most printers' fans, and its DIP switches are hard to reach (they are located right where the sound cover hinges). One feature that the 5055 has over the 5025 is that you can choose print pitch or proportional spacing with these DIP switches. We were upset that the 5055 ate up (literally) two multistrike ribbons before we got it working properly though.

Qume LetterPro 20 and Sprint 11 Plus

Those familiar with the looks of the Apple Letter Quality Printer will recognize the Qume Sprint 11 Plus right away—they look almost identical. In contrast, the LetterPro 20 not only looks different, but is also somewhat smaller. Both printers have reasonably thorough but hard-to-read manuals. Though both have proportional-spacing capability, you must purchase a special daisy wheel to use this feature.

Taking a closer look at the LetterPro 20, we noticed that its carriage returns after each line. This motion slows down an otherwise fast print speed to the 11 cps (23 minutes) we measured when printing this article. This printer also seemed slightly louder than others with the same print speed.

On the positive side for the LetterPro 20 are the convenient ruled markings, both on the cover for comparing print pitches and next to the carriage for lining up the paper. The LetterPro 20 also gives you manual control of the print hammer's intensity against the paper. For carbon copies or different typefaces, this selection of light, medium, or heavy will surely help out.

When we first opened up the box containing the Qume Sprint 11 Plus, it was all wet (literally!). Fortunately, the printer had been packed inside a plastic bag. Needless to say, we were a little afraid to plug it in. Fortunately, the printer turned on without a hitch, except for a loud, extended beep. Consulting the users' manual revealed that this sound was normal, however.

The Amdek 5055 zipped through this article in 6½ minutes and was a bit quieter than other printers this fast.

When it comes to speed, the Sprint 11 Plus is hard to beat. It brute-forced its way through this article in 6 minutes 15 seconds. We use the term *brute-force* since this printer, like the Apple Letter Quality Printer, is one of the loudest. A sound cover is advisable.

Even though this printer is strikingly similar to the Apple Letter Quality Printer, it has some enhancements. Speed is one, as is the addition of switches under the cover that control form length, print pitch (including pro-

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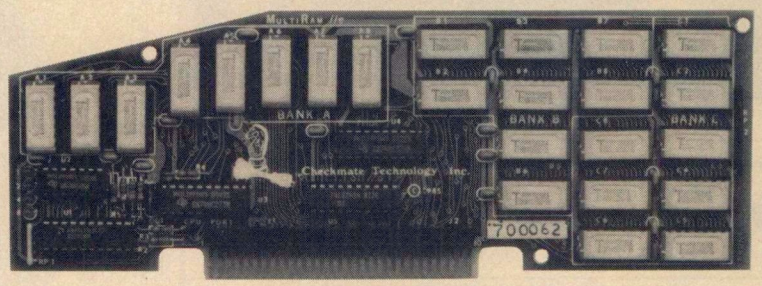

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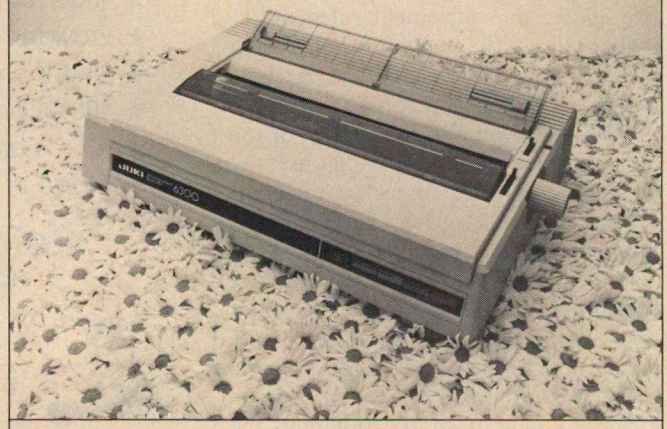
EPSON DX-10

Speed: 11 cps
Font: Courier 10

JUKI 6100

Speed: 17 cps
Font: Courier 10

JUKI 6300



Speed: 27.5 cps
Font: Prestige Elite 12

portional spacing), and line-feed spacing. What makes these switches unique is that you can change the settings while the printer remains on (without losing any data in the buffer).

Diablo Advantage D25

The Advantage D25 is a handsome printer with a sleek case design and a front panel with a high-tech look. A small door on the front panel hides DIP switches that choose print pitch and other default settings. The printer is also unusual in that it has no internal fan and no knobs for turning the platen. You feed and adjust the paper in the printer solely through the use of front-panel controls. You'll eventually get over the habit of reaching for the non-existent knobs. Diablo also offers a higher-priced printer, the Diablo 630 ($2990) that does have knobs and a whole lot more.

The Advantage D25 has another unusual aspect. It comes with an interface called an API or All Purpose Interface. This one-plug interface has enough inputs to handle either an RS-232C serial or a Centronics parallel interface. The trick is having the right cable to match your computer. Diablo supplies cables that interface to Centronics parallel and 25-pin RS-232C serial plugs, but Macintosh and Apple IIc owners must have their dealer custom-wire an API cable.

The Advantage D25 turned in an above-average performance of 13 min-

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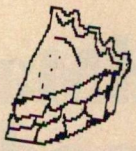

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Speed: 11 cps
Font: Courier 10 (Heavy)
Font: Courier 10 (Light)

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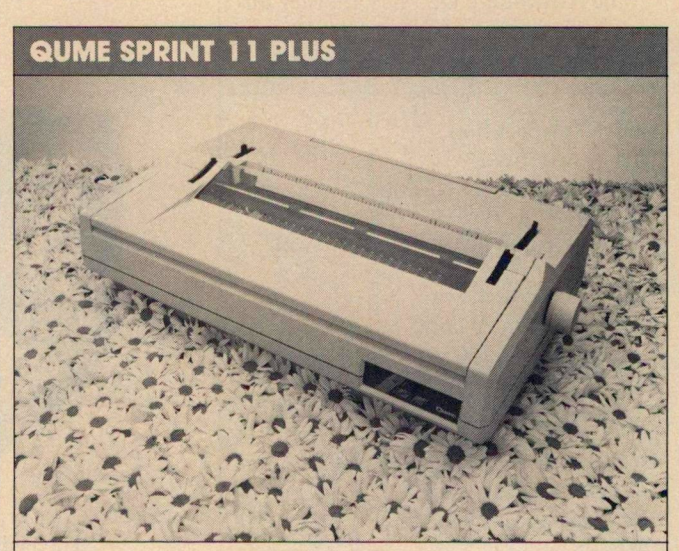

Speed: 40 cps
Font: Courier 10

utes when tackling this article, with an average amount of noise. The manual was hard to read and overtechnical, rather than helpful. If you're searching for a printer that looks sharp and has flexible setup features for less than $800, don't miss this one.

We've taken a close look at 11 printers ranging in price from $200 to $1990. Coming down to a final decision means assessing what your printing needs are and how much money you want to spend to meet them. It is generally true that faster printing speed costs more, but more and more daisywheel printers that offer decent print speed are becoming available at affordable prices.

Some of these have distinct advantages over their neighbors, depending on what appeals to you. Only you can decide which of them is *your* pick of the daisies. ✚

Francesca Venning-Townsley works with, writes about, and teaches others to use computers. David Townsley is a product engineer in the semiconductor industry. Both are frequent contributors to A+.

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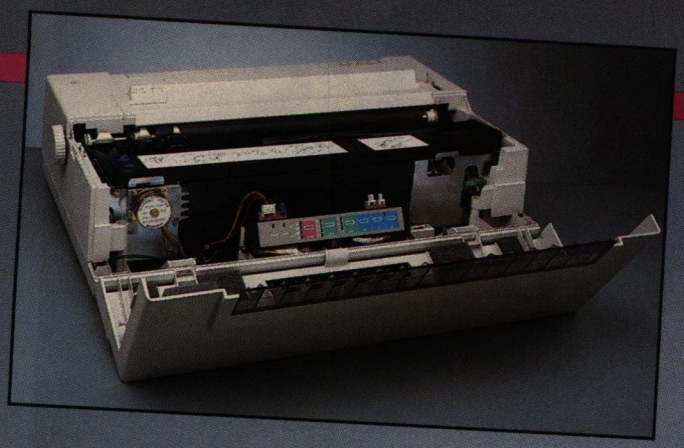

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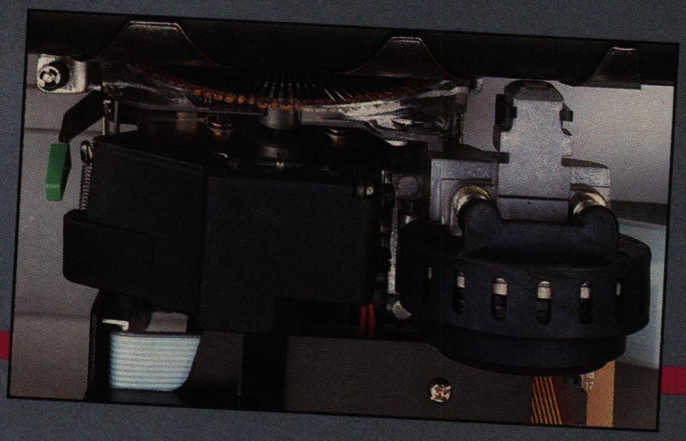

FortisDH45

▶ HARDWARE/BY GREG MAINIS

A new printer that can produce dot-matrix *and* letter-quality print

Over the years, we have seen printers evolve in many different directions. Shopping for a printer can be difficult, considering how many different types are available: daisy-wheel, dot-matrix, thermal, ink-jet, and laser. For the majority of us, however, the choice typically narrows down to purchasing a dot-matrix or a daisy-wheel printer. The trade-off is speed vs. print quality.

Now, a new hybrid has emerged. The Fortis DH45 from Dynax, Inc., is the first daisy-wheel/dot-matrix printer. Dynax has combined two print elements on a single carriage, giving you the ability to combine letter-quality and dot-matrix print on the same page.

The DH45 offers full text-formatting features in either letter-quality or dot-matrix print. You select from the four print modes on the control panel located on the front of the printer (see figure, page 70). The four switchable modes are WP (word-processing), draft quality; WP, letter quality; DP (data-processing), draft quality; and DP, letter quality. The checkerboard pattern on the front panel indicates draft quality (dot-matrix print), and an asterisk denotes letter quality. Your selection results in different types of output, depending on the computer you're using.

You might expect a WP mode to give you letter-quality print and a DP mode to produce dot-matrix output, but that is not the case with the DH45. Depending on the computer and the programs you use, you can enjoy fast dot-matrix printing with WP, draft quality, and switch to letter quality for the finished output. You have the same choice within the DP mode.

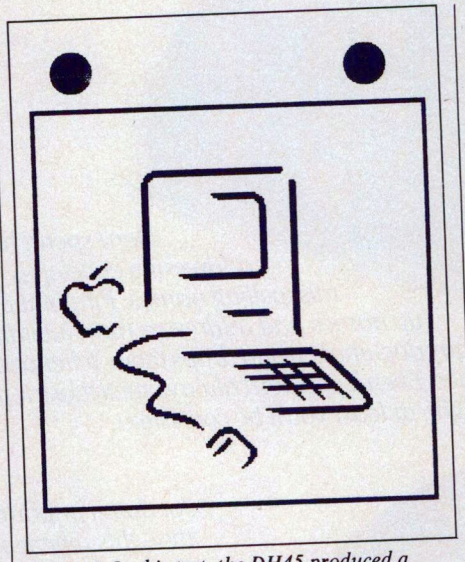

Figure 1: In this test, the DH45 produced a sharper picture than the Imagewriter with MacDraw, but it lost detail (see figure 2).

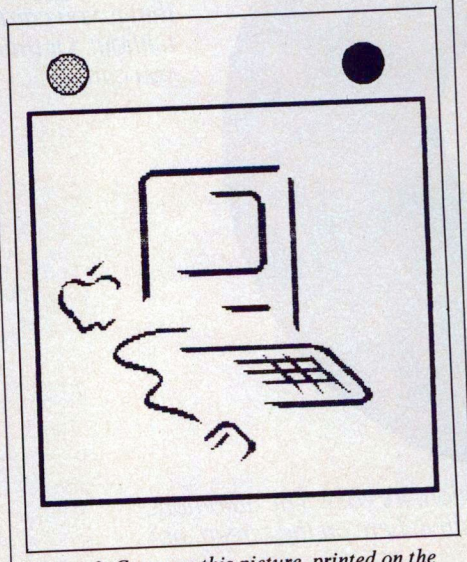

Figure 2: Compare this picture, printed on the Imagewriter, with the one in figure 1. Notice the detail on the top left circle.

Why have separate WP and DP modes if each can produce dot-matrix and letter-quality print? The answer is greater flexibility. If you have configured your application programs for a dot-matrix printer, you will have to use the DP mode, and if it's configured for letter quality, you will use the WP mode. When you select the checkerboard pattern on the front panel, in either the WP or DP mode (see figure 3), you will get dot-matrix output, regardless of the type of printer you configure for in your application program. You will stay with a selected mode to produce both types of output.

Compatibility

I was surprised to find out that the Fortis DH45 emulates the Epson FX-100 printer in the DP mode and the Diablo 630 in the WP mode. Therefore, this printer will not have any software-compatibility problems.

I tested the DH45 with a Macintosh, an Apple IIe, and an Apple IIc. In the tests, the DH45, equipped with a parallel interface, was no trouble to interface with the different computers. Dynax also offers a serial-interface option.

Apple-II-Series Computers

To determine the compatibility of this printer with the Apple IIe and IIc, I experimented with several popular programs, including PFS:Graph, Print Shop, AppleWorks, Word Juggler, and several of my own BASIC programs. In addition, I tested many different parallel-interface cards with the IIe, and they all performed well. Converting the Apple IIc's serial interface to parallel would have posed a problem, but with the help of a serial-to-parallel printer

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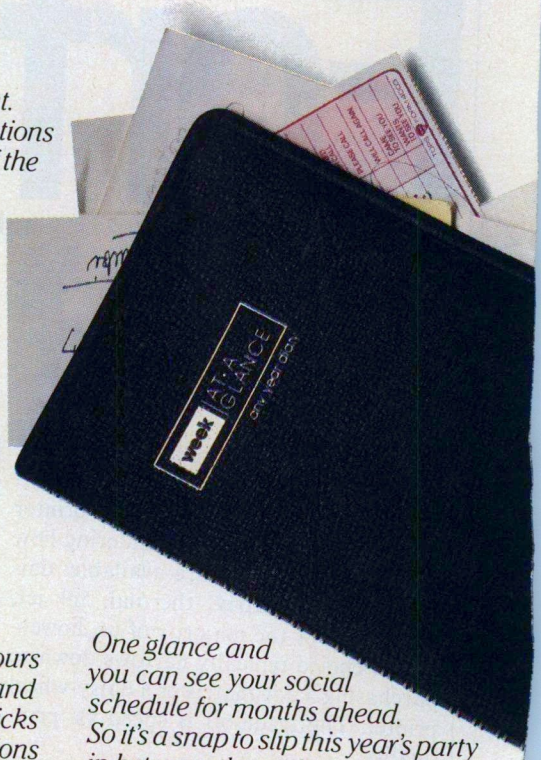

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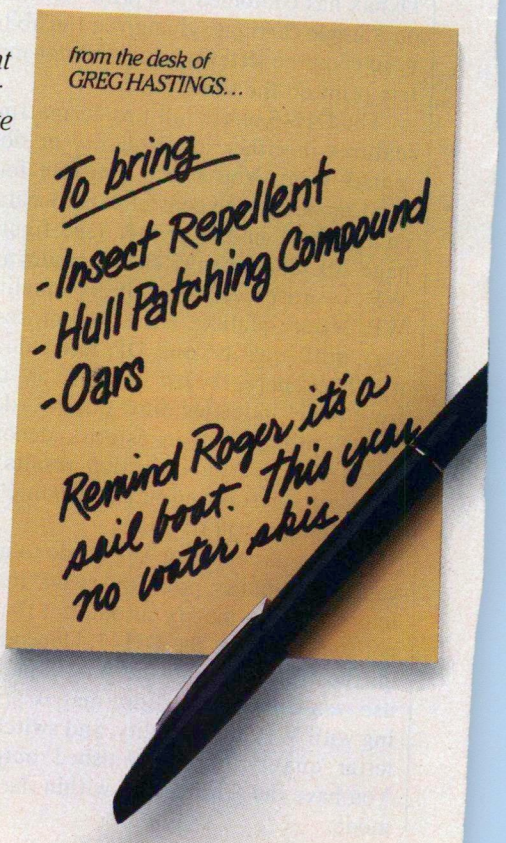

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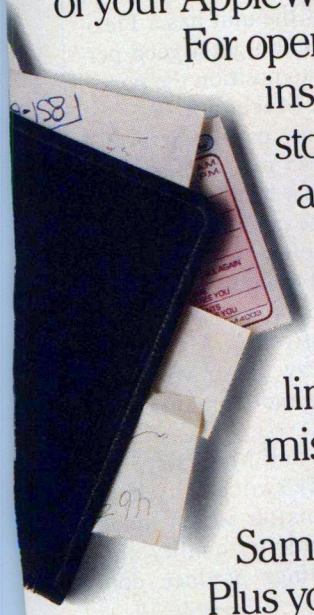

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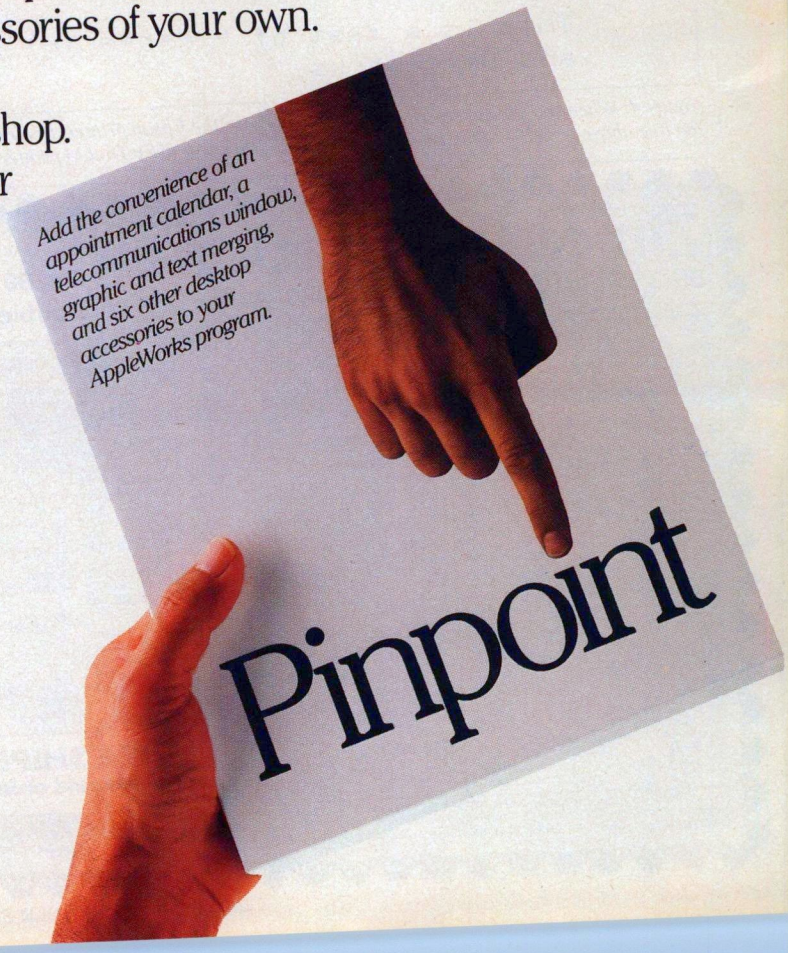

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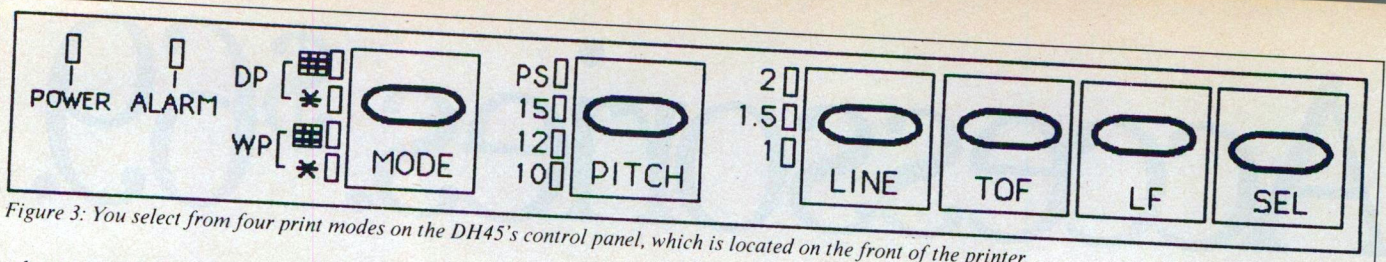

Figure 3: You select from four print modes on the DH45's control panel, which is located on the front of the printer.

adapter called The Pac (Microsci), I solved this problem.

The graphs that I printed with PFS:Graph and Print Shop were as good as graphs printed on an Epson printer. One important note: The correct mode for graphics output is DP, letter quality. DP, draft quality produces an additional carriage return between lines.

With AppleWorks it's easy to install a new printer driver for the DH45; you simply select Epson FX-100. To begin using the DH45, you select the proper mode on the printer's control panel. Since you've selected the Epson, you must choose one of the DP print qualities. By switching between these qualities, you can enjoy both print types. You can control AppleWorks' pitch adjustment by selecting the Pitch control on the control panel. Line-control adjustment takes place within the AppleWorks software.

The DH45 gave me good results when I used my own programs in BASIC. From a programming standpoint, the DH45 is easy to control. One look through the manual will give you all the information you need to adapt your own programs to this printer.

I did have a few minor problems while using application software. The first difficulty I encountered was in using superscript and subscript characters with AppleWorks and the Epson printer driver. Regardless of which DP print quality I selected, the superscript and subscript characters reverted to condensed dot-matrix output and would not extend into the line above or below (see figure 4). This superscript/subscript problem was also apparent with Word Juggler. The problem disappeared when I used a Diablo printer with either program.

The second problem occurred when I fed single sheets of paper into the printer. The printer I tested had no paper alarm, so printing continued onto the platen. You can alleviate this problem by using the Pause function in AppleWorks.

I had trouble determining where the top of the page should be placed in the printer. The top of the unit has a Plexiglas cover, so you can't get a good perspective on where to position the paper.

The DH45 and the Macintosh

Connecting the parallel-interface version of the DH45 to the Macintosh could have become a headache for me, but I got around the potential problems by using Microsoft's MacEnhancer port expander and printer-driver software. I accomplished the conversion by configuring the software—MacWrite, MacPaint, MacDraw, and Microsoft Word—with Epson and Diablo printer drivers.

With MacWrite and MacPaint, the DH45 automatically switches itself to the DP mode, no matter which mode you select. Both the letter-quality and the dot-matrix settings produce dot-

```
This is a test of superscript and subscript using the DH45
and Appleworks.

This is a test of superscript and subscript using the DH45
and Appleworks.
```

Figure 4: When you use superscripts or subscripts with the Epson printer driver configured, you get condensed dot-matrix output that doesn't extend into the line above or below. This problem disappears when you use a Diablo printer.

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Figure 5: The output that results when you use an Imagewriter printer after selecting Print Final in MacPaint

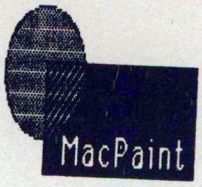

Figure 6: You get this output when you use the DH45 after selecting Print Final in MacPaint. You can easily notice the distortion.

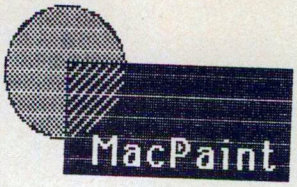

Figure 7: Although the distortion is reduced in the DH45's DP mode, the printer still does not produce an acceptable picture.

matrix print. Using MacWrite in the Standard mode presents no problems. The density of the print is not as good as that of the Imagewriter, but it is acceptable. You can't print in the High Quality mode—you get a continuous line of spurious characters.

To test the aspect ratio and print density of the MacPaint/DH45 combination, I drew a picture of a circle and a solid rectangle. The illustration in figure 5 is the output that resulted when I used an Imagewriter printer after selecting Print Final in MacPaint. The illustration in figure 6 is the result of using the DH45 to do the same thing. You can easily notice the distortion. The DH45 seemed to enter into its quad-density graphics mode. Using MacPaint's Print Draft command gets rid of most of the distortion, but, as you can see in figure 7, there were gaps between the passes of the printhead.

MacDraw worked much better. Since this program does not use bit-mapped graphics, the images were clear and undistorted. I produced figure 1 (see page 67) with the DH45 and figure 2 with the Imagewriter. The print on the DH45 is much crisper, but the detail in the left circle is gone.

Microsoft Word performs much like MacWrite with the Epson printer-driver configured, but with the Diablo 630 driver configured, Microsoft Word becomes a better program. Using the WP mode on the DH45, you can produce letter-quality and dot-matrix output.

If you are looking for an all-around printer for the Macintosh, stay with the Imagewriter, but if your primary purpose is to use Microsoft Word, the DH45 may be a good alternative to purchasing both a dot-matrix and a letter-quality printer.

Other Features

This 132-column printer has the ability to print bit-mapped graphics, and it has a complete selection of print formats and word-processing functions that you can control with Escape sequences. By using these features, you have the capability to enhance the documents you print. For example, you can mix letter-quality and dot-matrix output on the same page.

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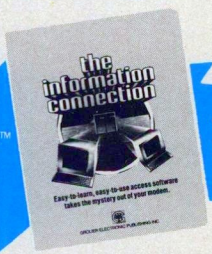

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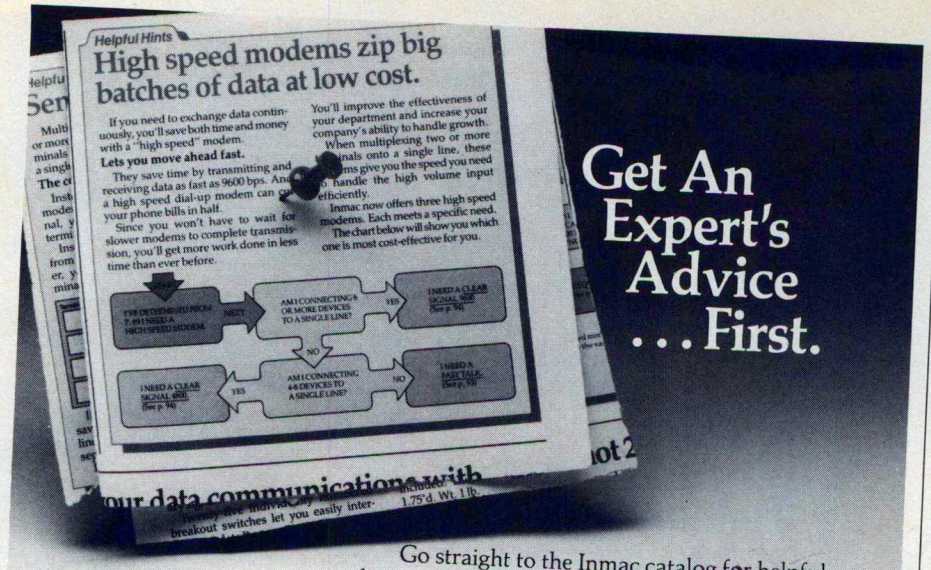

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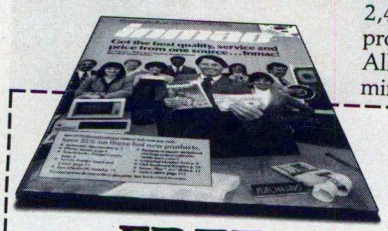

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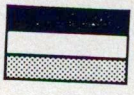

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to switch among six graphics modes, in addition to the four modes on the front panel. It states that you can produce single-, double-, and quadruple-density bit images, as well as double speed/double density, true circular graphics, and CRT copy (screen dump). You can access all graphic print functions in both the WP and the DP modes by issuing Escape-command codes to the printer.

You control printing with the six membrane switches on the front panel (see figure 3). In addition to the mode control, the following controls are available: pitch, line spacing, top of form (TOF), line feed (LF), and selection (SEL). The DH45 prints bidirectionally in either mode. A mode-lockout feature keeps you from switching between DP or WP if any remaining information is in the 3K buffer.

Three sets of DIP switches on the back of the printer give you further control. These switches control such things as the various character sets built into the printer for each print element, settings for parallel and serial protocols, and the default-mode choice (WP or DP mode).

The DH45 is rated at 36 cps (characters per second) for letter-quality mode, and 140 cps for dot-matrix mode. The daisy wheel can copy through an original document plus four carbons, and the print wheels are of the Brother/Dynax type.

Additional options include a tractor feed, cut-sheet feeder, serial interface, and 11K or 19K buffers.

The Fortis DH45 printer is an innovative product. The ability to mix dot matrix and letter quality is nice, especially in a corporate setting with traditional software programs. Macintosh users would be wise to be cautious about this printer, however, if they're thinking of using it as a substitute for the Imagewriter. ✚

Greg Mainis is a certified Apple developer and is active in developing custom application software. He is the author of Introducing ProDOS, *published by McGraw-Hill.*

▸ PRODUCT INFORMATION

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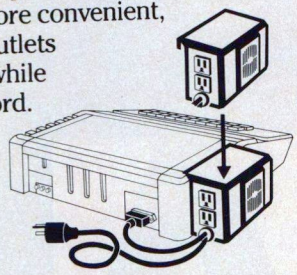


System Saver solves power line problems.

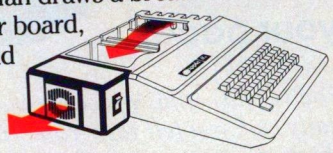
Impurities in the power supply cause 70-90% of all microcomputer malfunctions. Line noise can be interpreted as data, confusing your Apple and causing annoying system errors. Power surges and spikes can do costly damage to your computer's delicate circuitry.

System Saver clips surges and spikes at a safe level and filters out line noise. It makes your Apple more accurate, more efficient and more reliable.

System Saver keeps your Apple cool.

Peripheral cards added to your Apple not only generate heat, they block any natural air flow through the computer. The resulting high temperature conditions can potentially shorten the lives of both your Apple and your peripheral cards.

System Saver's quiet fan draws a breath of fresh air across the Apple's mother board, over the power supply and out the side ventilation slots at the rate of 17 cubic feet per minute.



More than 1/4 million Apple owners think of System Saver as the piece Apple forgot. And 1/4 million well-protected Apples agree. Available at your local dealer. For more information, contact Kensington Microware, 251 Park Avenue South, NY, NY 10010, (212) 475-5200 Telex: 467383 KML NY.

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System Saver is UL Listed. System Saver's surge suppression circuitry conforms to IEEE specification 507 1980, Category A. Also available in 220/240 Volts, 50/60 Hz.

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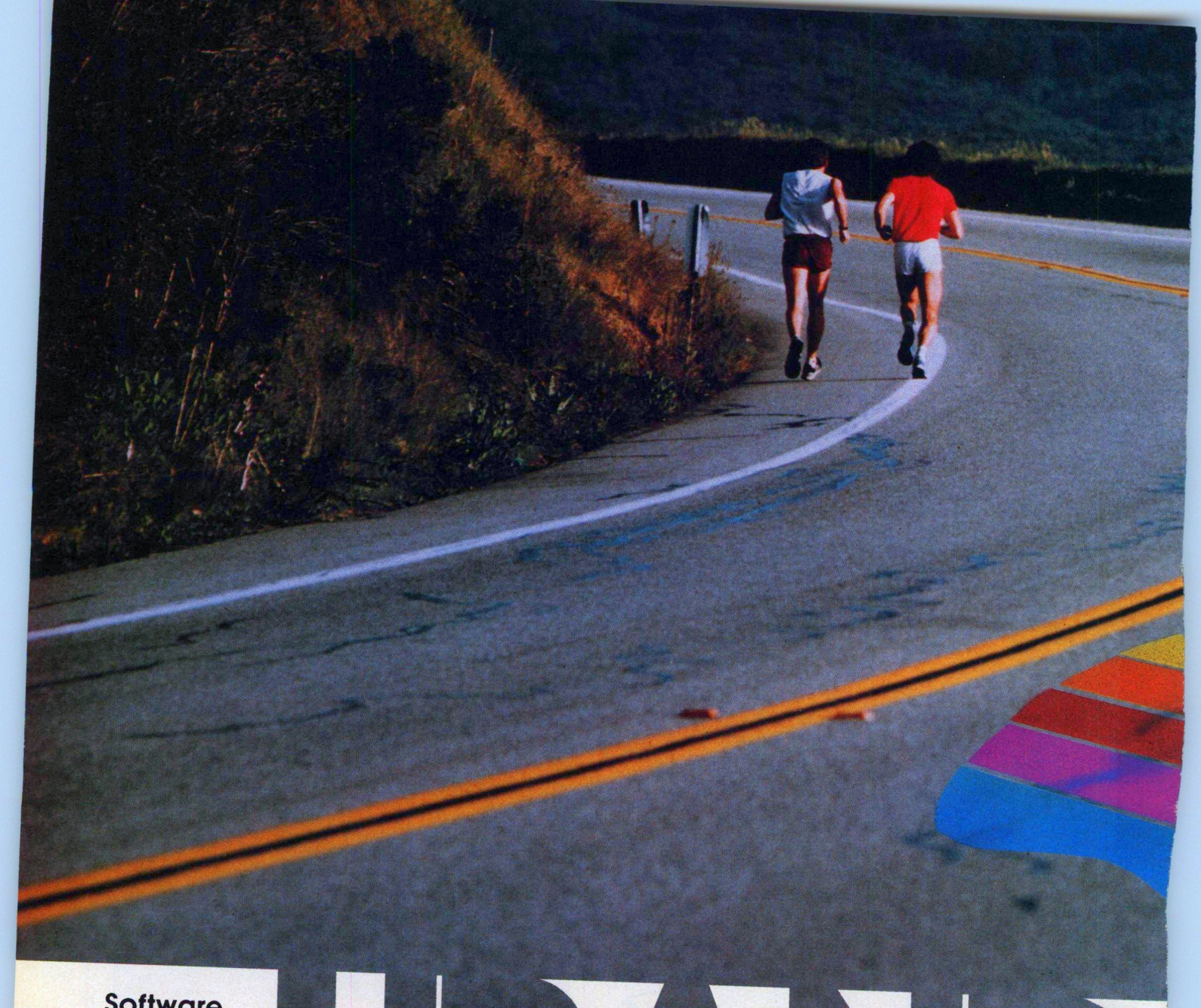
CIRCLE 134 ON READER SERVICE CARD



Software that puts you through your paces

UP AND

You've just finished your daily run; you felt fast. You think it was your best time ever, but you can't remember.

Training's been going well, more than 60 miles a week for the last month. Are you ready for a marathon?

You're interested in getting back in shape. Running seems like a good choice, but how much, how fast, and how often?

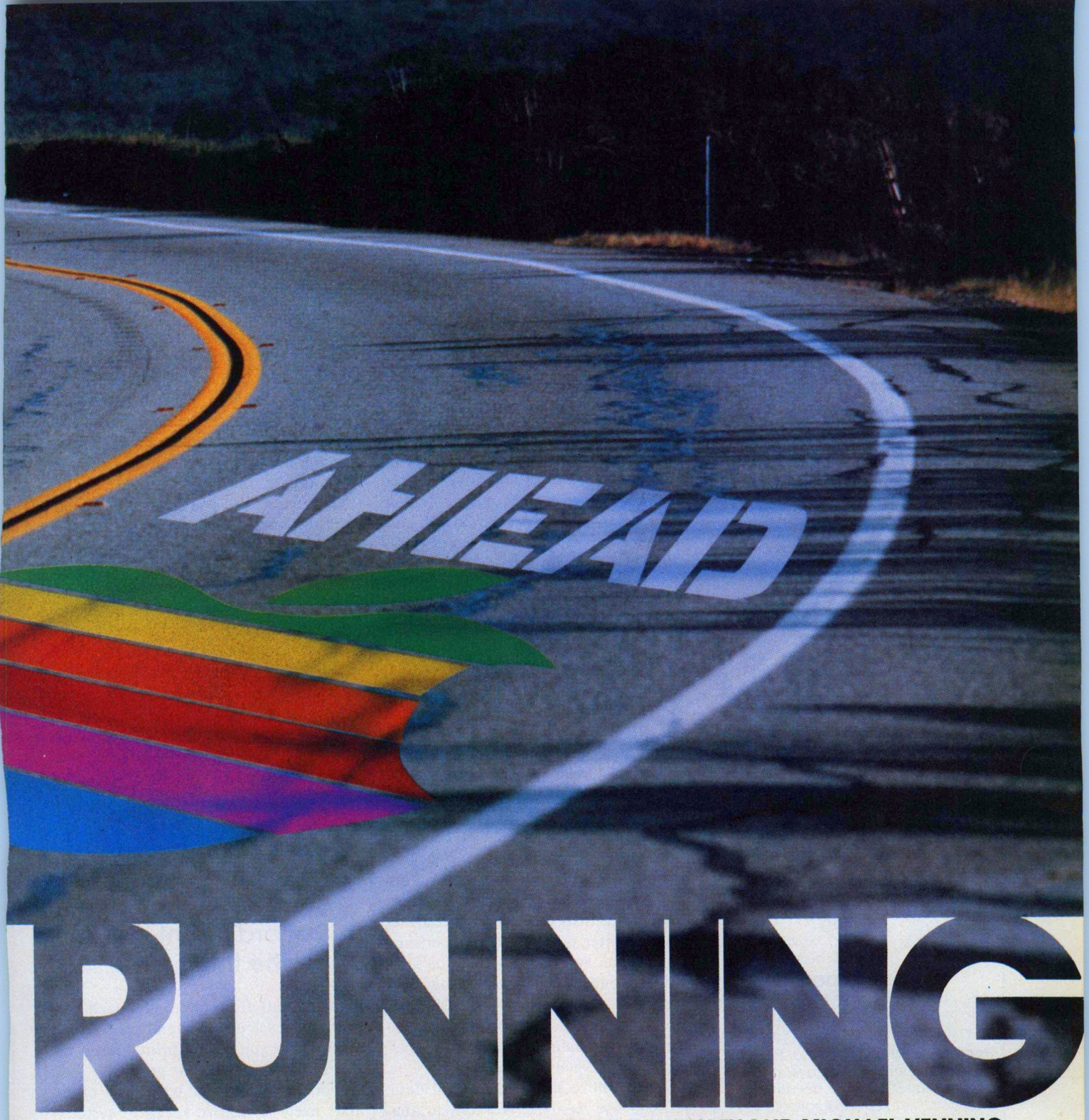
Are you in one of these situations? Yes? Then you might be interested in adding your Apple computer to your other running gear.

Most software for runners falls into three main categories: a "full service" program that provides individualized training suggestions in addition to record keeping, software designed to provide specialized training information (such as workout stress levels), or a program that basically works like a computerized calculator and running diary. We'll look at some available programs in each of these categories.

The Running Coach

The Running Coach is designed as a comprehensive program that gives both beginning and intermediate runners a training schedule and helps them maintain records of daily runs. The software is easy to use and provides many options.

For starters, the Consult the Coach option offers a preliminary conditioning program (for those of you just beginning a fitness pro-



RUNNING

▸ BY FRANCESCA VENNING-TOWNSLEY AND MICHAEL VENNING

gram). Once you've been running for a while, the Basic Running or Basic Training options let you set up a training schedule (either basic running or race training). Be careful, though, because the pace for all training runs on the schedule seems to require maximum effort, which is counter to the advice of most serious runners. You should consult the manual from time to time, since it has information that will help you understand the intent of the training schedule, as well as the program itself. You enter daily runs by selecting the Update Log option, which allows for the input of miles and time, plus several pulse readings and an indication of the run's exertion levels.

The Generates Reports option lets you review the information in these daily entries and print the data to show an individual log entry, a column report that lists the information in a tabular chart, totals/averages, graphs, or personal records. A custom-report section allows you to formulate only the information you would like to see.

For new or experienced runners who want a full slate of options, the Running Coach offers the most.

Peak Performance: Run

One threat to serious runners (besides dogs and cars) is getting injured. Runners who train hard may actually impair their improvement and increase their risk of injury by overtraining. Peak Perfor-

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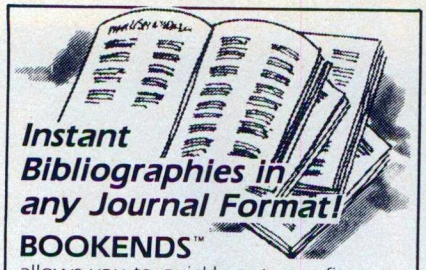

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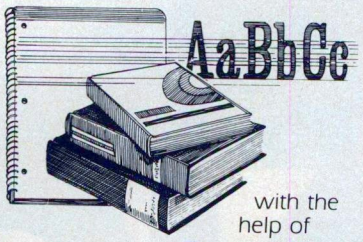

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CIRCLE 101 ON READER SERVICE CARD

mance: Run is a specialized program designed to help runners determine the stress level of a workout and the amount of rest necessary for body recovery. The program is based on research in athletic physiology by Dr. David Costill, Director of the Human Performance Lab at Ball State University in Muncie, Indiana.

Peak Performance: Run is a way for serious runners to bring the principles of 'stress plus rest' to their workouts.

Version 1.0 of this program allows only one person to use the diskette (the program diskette has room to save about 100 runs). A second version, which is due out this fall, saves information to a separate data diskette and allows more than one runner to use the program. Peak Performance: Run has all documentation and explanations online. Thus, explanations are brief and to the point, but you have to "flip" through screens of information to get to what you want.

Peak Performance: Run uses short menus and prompts to get you "on the right track." The only major complaint we have is that once you choose a menu item, you can't get back to the previous menu until you've entered all required data. Two of the five menu items are informational: Introduction to Program and Help in Getting Started. Another menu item, Inspect Performance Data, lets you enter or change your personal information and requires that you have times for one or more of the following: a one-mile, two-mile, and/or 10K run. You also enter your weight, and the program then calculates your "VO2 max." (maximal oxygen uptake).

Once you've saved this initial data, you can use Analyze Workout to analyze a new run or a previously saved one. The analyses of straight runs and interval workouts are different, but both give you a descriptive summary of the workout, your workout intensity (the physiological stress of the workout), calories burned, average pace, percentage of V02 max., total run time, and average run length for the last four weeks. You can also print out your workout analysis or any other data from other menu items. Once you've analyzed your workout, the Explain Computer Output menu item helps you understand the numbers in the analysis.

Peak Performance: Run is a way for serious runners to bring the training principles of "stress plus rest" to their workouts, thereby increasing their performance and reducing risk of injury.

Runner's Record

Runner's Record is a program devoted solely to record keeping. You can log data for daily runs or for 13 different race distances. Daily run entries allow for date, distance, time, and comments (up to 70 characters). You can save about two years' worth of records to a separate data diskette, and you can review them in tabular (daily only) or graphic form (by week or month). The program calculates the pace for your runs and gives your mileage for the last 7 and 30 days, plus a year-to-date total.

Unfortunately, you can print out neither the graphs you see on the screen nor your workout comments. In fact, the information you can print out is in a format different from what you see on your screen. Runner's Record is able to print all your daily records; we recommend continuous paper, as the program doesn't stop for separate sheets.

The race-entry section lets you enter results for 13 distances (from one mile to an ultrarun). You can review race information for a specific date or look at graphs for a specific distance or a comparison of all distances. Below each bar graph, you see distance and pace information, but you cannot print out any of this race data or the bar graphs.

For runners who race often and need a record-keeping system, Runner's Record might just be the thing.

For those runners who race often and need a record-keeping system, Runner's Record might just be the thing to help keep track of all those race records.

Jogger

Another competitor in the record-keeping category is Jogger. It lets you save daily entries to the program diskette (about eight years' worth) or to a separate data diskette (about 12 years' worth). Data entry requires only the input of distance in miles and time, as the day and date already appear on the screen. Jogger then calculates the pace and assigns each run "aerobic points,"

Expanding Your IIc Is Easy With Z-RAM™

Z-RAM for the IIc is available with 256K or 512K of additional memory and a powerful Z-80 microprocessor for running CP/M software.

Z-RAM fits neatly inside the IIc. Installation is easy, clear instructions show you how without voiding your IIc warranty. You'll need a screwdriver and about 10 minutes (if you can change a light bulb you can install Z-RAM).

Z-RAM and Appleworks will knock your socks off.

A 256K Z-RAM will give you a 229K available desktop and Appleworks will be completely loaded into memory. Appleworks will now run about 10 times faster in your IIc with 1 disk drive than in other IIc's with 2 disk drives. And only Z-RAM increases the maximum number of records in the data base and lines in the word processor. And only Z-RAM will auto segment large files so any size file can be saved on regular floppies or a hard disk. A 512K Z-RAM will give you a 413K available desktop. A 256K Z-RAM can be upgraded to 512K by just plugging in more memory chips.

Z-RAM is also a high speed solid state disk drive. With Z-RAM, your programs will load and save over 20 times faster. Z-RAM's RAM disk is compatible with Applesoft, Pro-DOS, DOS 3.3, PASCAL and CP/M. And with Z-RAM, you can copy a disk in one pass. Just insert the original, remove the original, insert blank disk! That's it! Z-RAM is another disk drive, only 20 times faster, 4 times larger capacity, and no whirring, clicking or waiting!

But before you start panting over all that extra memory, don't forget that the Z-RAM card has a built-in high speed Z-80 processor chip that allows you to run CP/M programs like Wordstar, dBASE II, Turbo PASCAL, Microsoft BASIC, FORTRAN and COBOL and over 3,000 other CP/M programs. So Z-RAM not only makes Apple programs run better and faster, it lets you run MORE programs.

With the Z-RAM card installed, your IIc is still your IIc only now you'll have that extra memory that Appleworks and other programs need. And you can run all that great CP/M software that others can only dream about.

Z-RAM is 100% compatible with all IIc software and hardware including the mouse, 2nd disk, modem and printer. Z-RAM is easily handled by the IIc power supply as power consumption is kept very low by using two custom integrated circuits and a patent pending power saving design. And Z-RAM is from Applied Engineering, the acknowledged leader and innovator of accessories for the Apple.

Z-RAM comes complete with manual, RAM disk software, Z-80 operating system, CP/M manual and a 5 year no hassle warranty.

So the next time somebody asks you why you didn't get an IBM, tell him you bought a IIc because the IBM didn't have enough memory and was too slow and couldn't run CP/M software. And tell him you made it past the 8th grade.

Z-RAM with 256K	**$399**
Z-RAM with 512K	**$479**

If you want to run CP/M software, but don't need more memory, may we suggest our Z-80c card. The Z-80c offers the same CP/M performance as Z-RAM but has no memory expansion ports. And the Z-80c will not affect the running of Apple programs. The Z-80c is priced at only $159.00 and should you ever want to upgrade to Z-RAM, we'll refund your full purchase price.

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providing a comparison of relative effort. These aerobic points are based on the work of Dr. Kenneth Cooper, a pioneer in aerobic training.

You can review information in six tabular formats, and you have 23 graphic options. This flexibility might be a selling point, if you're one of those people who likes to see information in a myriad of ways. Tabular information is easy to print, but in order to print the graphs, you will need to have an Epson MX-80 printer with a Graftrax interface card.

In the ease-of-use area, Jogger has a few quirks. Each time you start this program, you'll need to get through a couple of preliminary screens before arriving at the main menu. Both the main menu and the graphics menu are quite long; you'll probably use only a portion of the available commands. Finally, when you use the graphics options, the program erases the main Jogger menu, meaning that you have to restart the program to enter or review data.

If you're a runner who's motivated by reviewing training statistics, Jogger will give you enough information to work with, long after you've cooled down from your run.

Hitting the Road

"Computerizing" your running program does sound interesting. Before you lace up those running shoes, though, remember that the information you enter in any runners' program is fairly subjective; on the other hand, your computer will give you back objective information and "advice." Take this information about your running or training with a grain of salt. Remember, the most important training guide is your body. Listen to it! +

Francesca Venning-Townsley, a writer/instructional designer, has written about computer products since 1982. Michael Venning has been involved in various levels of running for the last 14 years.

▶ PRODUCT INFORMATION

Jogger
Parsons Software
1920 Briar Meadow
Arlington, TX 76014
(817) 465-4720
List Price: $29
Requires: Apple II Plus, IIe, or IIc; 48K RAM; one disk drive
CIRCLE 351 ON READER SERVICE CARD

Peak Performance: Run
Peak Performance
P.O. Box 60681
Palo Alto, CA 94306
(415) 424-0208
List Price: $49
Requires: Apple II, II Plus, IIe, IIc, or III in Emulation mode; 48K RAM; one disk drive
CIRCLE 352 ON READER SERVICE CARD

Runner's Record
KNS Software
P.O. Box 9777
Denver, CO 80209
(303) 722-4831
List Price: $24.95
Requires: Apple II Plus, IIe, or IIc; 48K RAM; one disk drive
CIRCLE 353 ON READER SERVICE CARD

The Running Coach
Software Publishing Corporation
1901 Landings Drive
Mountain View, CA 94043
(415) 962-8910
List Price: $69.95
Requires: Apple II, II Plus, IIe, IIc, or III in Emulation mode; 48K RAM; one disk drive
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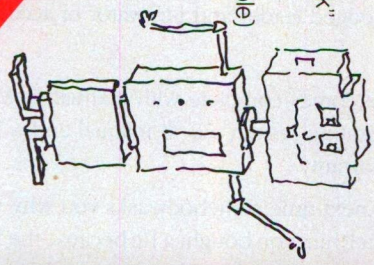
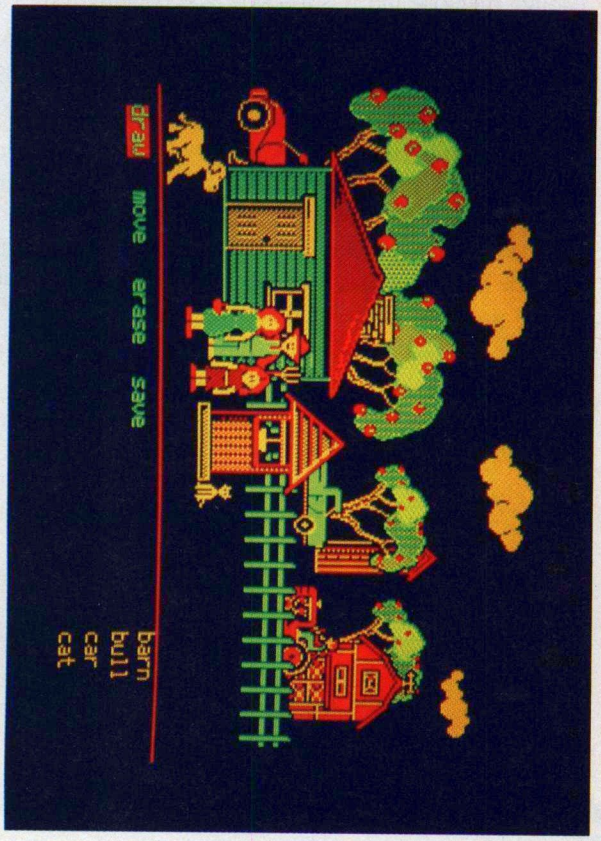


The Farm



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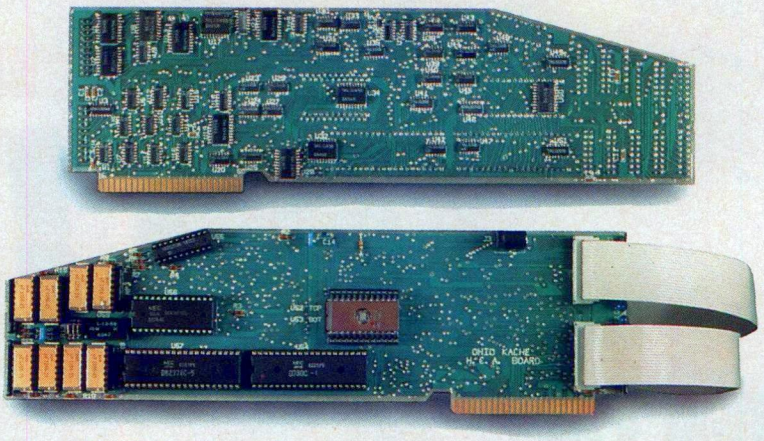

THE KACHE BOARD IS SUPERIOR TO RAM DISK.

The Kache Board offers performance that is superior to RAM disk for three primary reasons: data is automatically updated on the disk as it is changed, minimizing its vulnerability; data fetching from disk is transparent, eliminating the need to copy files; and cache memory retains only those files that are most frequently accessed, ensuring the greatest possible reduction in hard disk accessing.

SYSTEM COMPATIBILITY.

To date, the Kache Board is only compatible with Apple II+ and IIe systems with hard disk drive; however, boards for IBM, AT&T and Texas Instrument microcomputers are already in final testing stages and will become available later this year.

TECHNICALLY SPEAKING.

The Kache Board, a host adapter, is compatible with most Small Computer Standard Interface (SCSI) hard disk drives. Management of the cache memory buffers is carried out by a Z80 microprocessor which draws its power from an outside, custom tabletop power source (available as an optional purchase). Heat dissipation from the board amounts to approximately 6 watts.

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The functionality and intelligence of the 11" x 3¼" Kache Board is made possible by the technology of Surface Mounted Devices (SMD's). SMD's, tiny integrated circuits a fraction of the size and weight of conventional devices, are mounted on the underside of the board in a highly concentrated schema. This allows room on the top side of the board for the microprocessor, memory chips, custom integrated circuits and other components that, to date, are not available in SMD proportions.

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The Kache Board is easy to install and can reside in any one of four slots: 4, 5, 6 or 7. In addition, a cable is provided for ease of installation to your 50 pin SCSI disk connection. The self-contained power source plugs into the Kache Board and relays power from any standard 110 volt electrical outlet.

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The Kache Board is available from Ohio Kache Systems (OKS) on a direct mail basis only. A rigorous 48 hours of testing is completed on every unit prior to shipment. Nonetheless, Ohio Kache Systems offers a 90 day warranty on all components and labor as well as a 30 day trial period. If the Kache Board doesn't perform as we say it will, return it to us for a full refund.

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For further information on the Kache Board, Ohio Kache Systems Corp., or the compatibility of your hard disk drive, please contact us at (513) 746-9160.

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OKS

CIRCLE 178 ON READER SERVICE CARD

POSITIVE WRITE PROTECTION

A SWITCH YOU CAN INSTALL YOURSELF HELPS YOU PROTECT YOUR DATA.

Several articles in various microcomputer magazines recently have described modifications that users can make to disk drives to make them show whether the disk is write-protected or not. Almost every computer magazine has advertisements for devices that can cut a notch in the proper place on a disk, thereby allowing you to use the other side of the disk. Most of us have used write-protect tabs that come off our disks, leaving a sticky residue around the write-protect notch.

None of the write-protect schemes I've just described give you any positive control over write protection. This article describes a way that you can attach a write-protect switch and indicator light to your disk drive for less than $10. Using this switch allows you to set the drive to either write-protected or write-enabled status. You should never again have a write-protect accident with one of your disks. After using my modified drives for several months, I wouldn't want to work with a computer that didn't have this feature.

The whole idea behind this modification is to install a push-button switch to replace the notch-sensing microswitch. The push-button switch allows or doesn't allow writing on the disk, and with the light indicating a write or no-write condition, you have complete control over write protection. Any disk can be written on, with or without a notch, with or without a write-protect tab. I used an Alcoswitch model 16SL5 for my drive, but many switches can work. The Alcoswitch comes in a blister pack from Augat Inc. Packaged Products, P.O. Box 659, Attleboro, MA 02703. The part number is PP16SL5-11.

Follow the steps carefully and don't force any fits, and the modification will let you use your drives with a new sense of security.

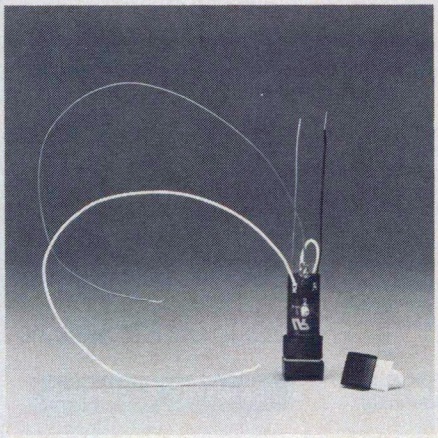

Figure 1: Prewire the switch. Strip ¼ inch from each end of the wires, connect the wires to the switch, and solder the joints as indicated in the text of this article.

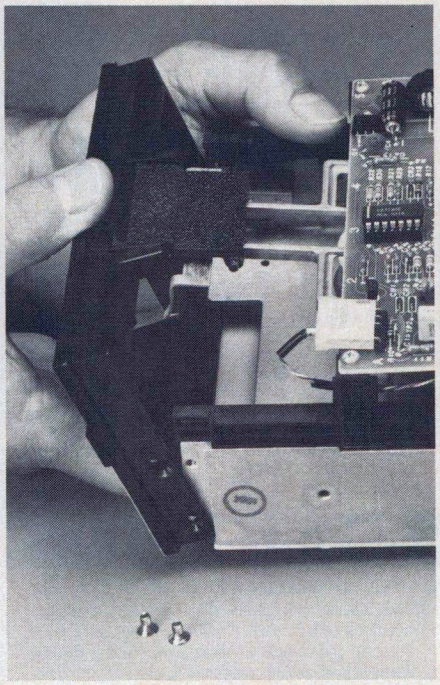

Figure 2: Carefully remove the front cover of the disk drive. Slide off the front cover until it disengages from the disk-locking mechanism.

Installation Instructions

Warning: Installation of this modification may void any existing warranty on the modified disk drive. Proper installation will not adversely affect the operation of the disk drive.

1. Prewire the switch. These instructions are designed for the installation of an Alcoswitch, model 16SL5 illuminated push-button switch. If you choose to use another brand or model of switch, or if you do not have the four-color wires, adjust the instructions accordingly (see figure 1).

a. Cut one 11-inch and one 2-inch length of white bell wire.

b. Cut one 3-inch length of black bell wire.

c. Cut one 3-inch length of red bell wire.

d. Cut one 11-inch length of green bell wire.

e. Strip ¼ inch from each end of all the wires.

f. Connect the 2-inch length of wire between pins 1 and A of the switch.

g. Solder the connections on pins 1 and A.

h. Connect the other wires and solder the joints as indicated below.

2. Unplug the computer to ensure that no power is present at any of the contact points within the drive.

Pin	Color	Wire Connected to
A	white	pin 1 (jumper)
1	white	pin A (jumper)
2	white	12-volt source (11 in)
3	black	microswitch wire (3 in)
4	red	microswitch wire (3 in)
B	green	12-volt source (11 in)

Prewiring the switch

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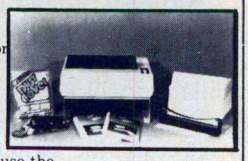

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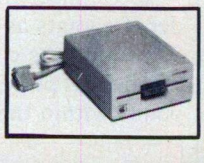

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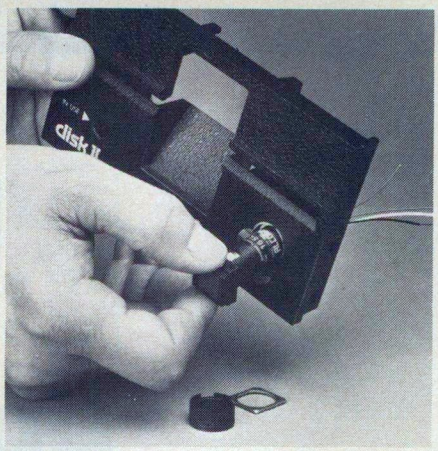

Figure 3: After drilling a ⅝-inch hole, remove the plastic retaining nut and metal mounting bracket from the switch, and guide the wires and then the button through the hole in the front.

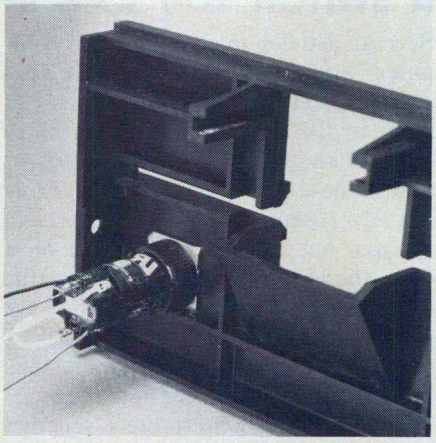

Figure 4: From the back of the plate, put the metal mounting bracket (with the prongs facing the front plate) and plastic retaining nut on the button. Do not overtighten!

3. If you cannot, or do not want to, drill and solder where the computer is located, open the back of the computer and unplug the disk drive. Be careful not to damage any of the contacts.
4. Carefully remove the top cover of the disk drive. On an Apple drive, you remove the four screws on the bottom of the drive and slide the cover to the rear until it is free. Set the cover and screws aside in a safe place until you are ready to replace them.
5. Carefully remove the front cover of the disk drive. On most models, you must remove two screws on each side of the front cover. Set the screws aside in a safe place until the installation is complete. Disconnect the IN USE light by prying off the retaining ring. Then, from the front of the panel, gently push the light through the socket. The cover slides off toward the front until it disengages from the disk-locking mechanism (see figure 2).
6. Cover the disk drive completely with a clean cloth to prevent any drilling shavings from falling into the mecha-

CIRCLE 292 ON READER SERVICE CARD

nism. Turning the front cover plate over, you will see a large blank area below the disk slot and opposite the LED. The center of this area is where you should drill a $^1/_{16}$-inch hole as a marker for the location of the push-button switch. Turn the plate over and drill, from the front, a $^5/_8$-inch hole.

7. After cleaning up all the shavings, remove the cloth from the disk drive. Carefully remove the plastic retaining nut and metal mounting bracket from the switch. Guide the wires and then the button through the hole in the front plate, from the front (see figure 3). Replace the metal mounting bracket (with the prongs facing the front plate) and the plastic retaining nut. Do not break any of the contacts or solder joints during this process. Tighten the retaining nut, while the switch is properly aligned, until the switch is firmly attached (see figure 4). *Do not overtighten*!

8. Facing the front of the drive, you will find a microswitch at the front left side that has two wires connected to it. This is the write-enable switch, which senses the presence or absence of a notch without a tab. Cut the two wires leading to the microswitch as close to the switch as possible (see figure 5). Strip the insulation from the two wires, leaving about ¼ inch of bare wire. Solder one wire each to the black and red wires on the switch kit. Use electrical tape to cover the soldered joints.

9. Route the green and white wires along the bottom of the drive to the rear and up to the top. Make certain that none of the wires will interfere with the normal insertion and removal of disks from the drive. Also make sure that the wires do not interfere with head travel.

10. The green and white wires must be attached to the + and − sides of a 12-volt source. Twelve-volt sources are usually available on both sides of one of the larger capacitors on the top board. For instance, the 12-volt locations for Apple drives are both sides of capacitor C-19, and Microsci's are both sides of capacitor C-5.

Fasten the green and white wires to both sides of the selected capacitor, making sure that the wires do not touch any other components of the circuit board. Solder the connections (see figure 6). *Do not overheat the capacitor!*

11. Make sure once again that all wires are out of the way; plug in and turn on the computer. The button should light up when it is in the out position and turn off when it is depressed. If this is not the case, check the above steps.

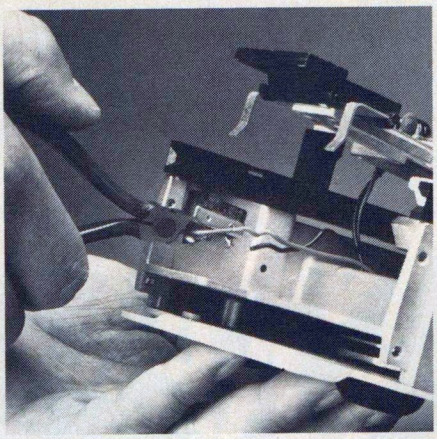

Figure 5: Cut the two wires leading to the write-enable switch as close to the switch as possible and strip the ¼ inch of insulation from the end of each wire.

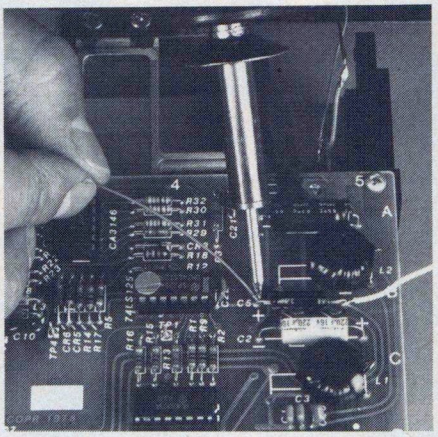

Figure 6: The green and white wires must be attached to the + and − sides of a 12-volt source. Use capacitor C-5 on a Microsci drive and capacitor C-19 on an Apple drive.

12. Slide the front cover plate into position and attach it with the four screws. Reconnect the IN USE light. Check the operation of the locking mechanism before fastening the plate. You must insert the two lugs on the left and right sides of the plastic lever in the slot in the front plate. If the mechanism is working properly, tighten the screws that hold the front cover plate. At this point, you should test the operation of the write-protect switch. When the button is in the in position, the light should be on and the disk should be write-protected. Disk reads are, of course, not inhibited when the write-protect function is in effect. When the button is in the out position, the light is off, and both reads and writes are possible.

13. Slide the top cover into position and attach with the four screws. The installation is complete. ✚

Jon vanWormer is a free-lance writer who lives in Fountain Valley, California, and has over 25 years' experience as a programmer and systems analyst.

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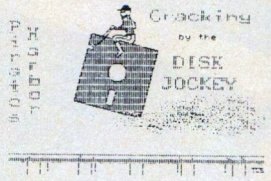

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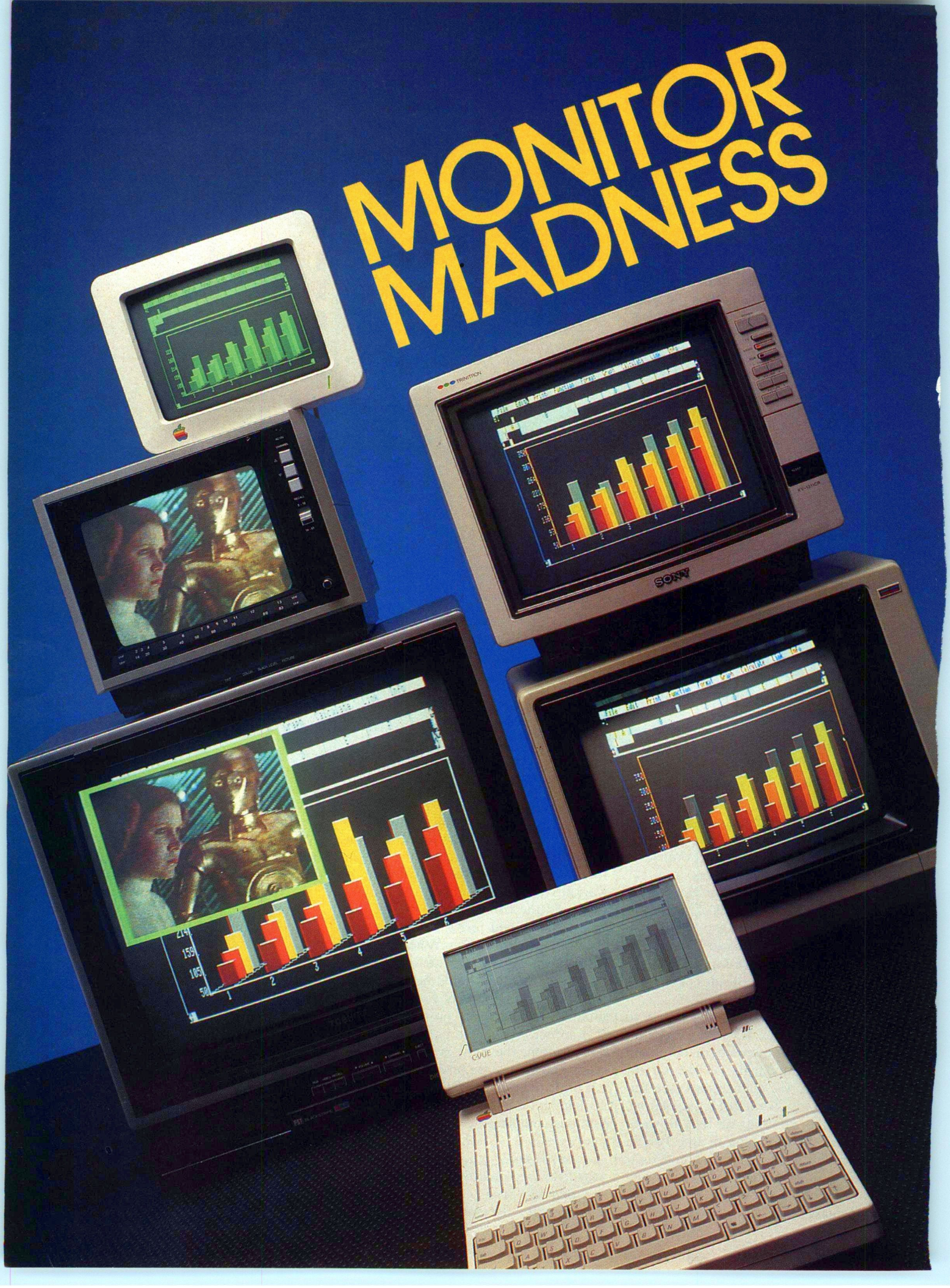
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The IIc's video flexibility makes it truly a computer for all displays.

Everyone knows the Apple IIc is handsome, inexpensive, and portable, and runs a lot of software, but the littlest Apple has never been considered a serious business machine.

What most business users are overlooking is that the IIc can easily drive more kinds of video displays than any other computer on the market. It can drive both an RGB color monitor and a composite color monitor at the same time or work with a standard TV or the new flat-panel liquid-crystal display.

This flexibility has already made the IIc just as popular in the classroom as its predecessors were. The ability to drive any convenient monitor is important in schools, where money is often tight and equipment must double for a variety of purposes. Ports for two large color displays make it possible to reach every corner of the classroom with a single computer.

These same attributes are necessary in the business community, especially for full-color presentation graphics. Too often, business executives hold meetings and presentations without the graphics and computer support they need. The idea of dragging a computer along on a trip seems just too complicated. That's hardly the case with the compact IIc.

The IIc has a counterpart in the world of computer monitors: amazing new digital televisions that accept multiple RGB, composite, and RF signals at once. These all-purpose monitors can process up to eight inputs from various sources, allowing you to switch effortlessly from one to another via remote control. Some digital TVs even have microprocessor-controlled windows to display two screens at the same time.

Imagine working on your spreadsheet, while watching a baseball game in the corner window of the very same display! It's possible, though the most practical use of a digital TV is to consolidate the signals of all of an office's visual devices, such as computers, videocassette recorders (VCRs) and satellite dishes, into a single full-size color monitor.

Most people have a passing knowledge of the three most common types of video signals—composite, RF, and RGB. In case you don't, here they are:

Composite

This is the display best known to Apple II users, as well as owners of most home-computer brands. A single "composite" signal contains all of the necessary video information. The Apple IIc has a superior composite output, capable of producing an 80-column display.

Happily, most videocassette recorders produce the same kind of composite signal from their dubbing parts, so a color composite monitor can display Madonna just as easily as Zork. Monochrome composite monitors remain the most economical buy on the market, with medium-resolution models selling for less than a hundred dollars.

RF (Radio Frequency)

Television signals are actually carried on a radio frequency, which is the only kind of signal a regular TV is equipped to handle. In order to use a TV set for a display, a computer needs an RF modulator to convert the signal into the radio frequency the tuner expects. The Apple IIc comes furnished with an external RF modulator, allowing it to use any regular television.

RGB

If you've ever seen a big projection TV, you may have noticed that three projectors team up to create the picture: one each for red, green, and blue. At the back of every color picture tube are electron-beam guns with those same three colors shooting phosphor dots at the screen.

These three guns, or drivers, produce the three primary colors that blend together to become all the other colors, in their various intensities. The most efficient video monitor receives separate signals for each color—red, green, and blue—rather than a composite signal, straight from the video processor. For RGB, you need a plug with several pins, some of which relay other signals, which control factors such as video intensity and horizontal synchronization.

Docking Modules

Typically, computers work well with one type of display screen, and that's it. Plug-in graphics cards can increase the options of an expandable system such as the Apple IIe computer, but they do so at a cost. Portability is one of the first benefits to go.

In researching a book on lap computers, we constantly bemoaned the fact that few of those briefcase marvels could use anything but a dim liquid-

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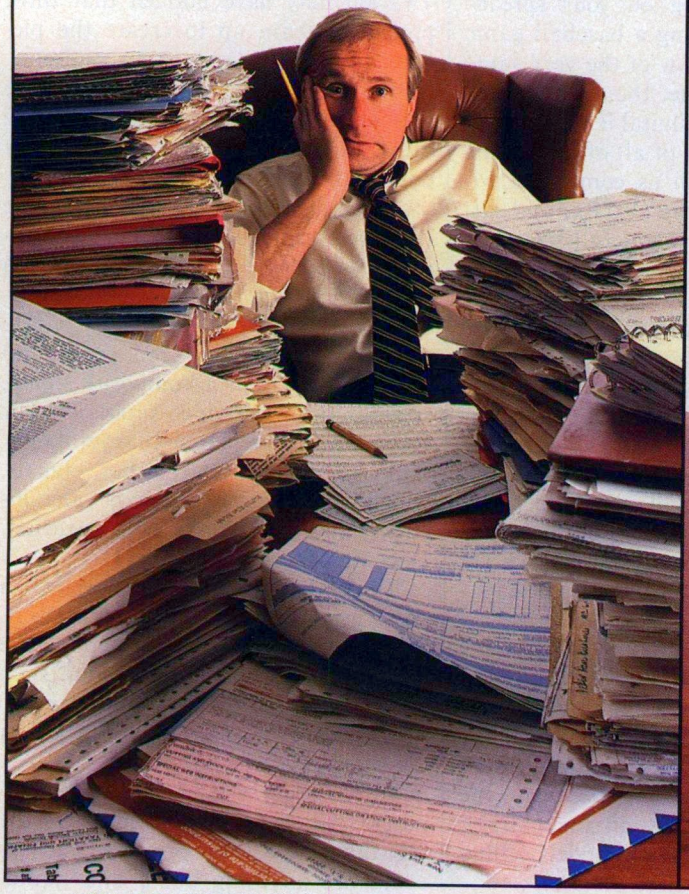

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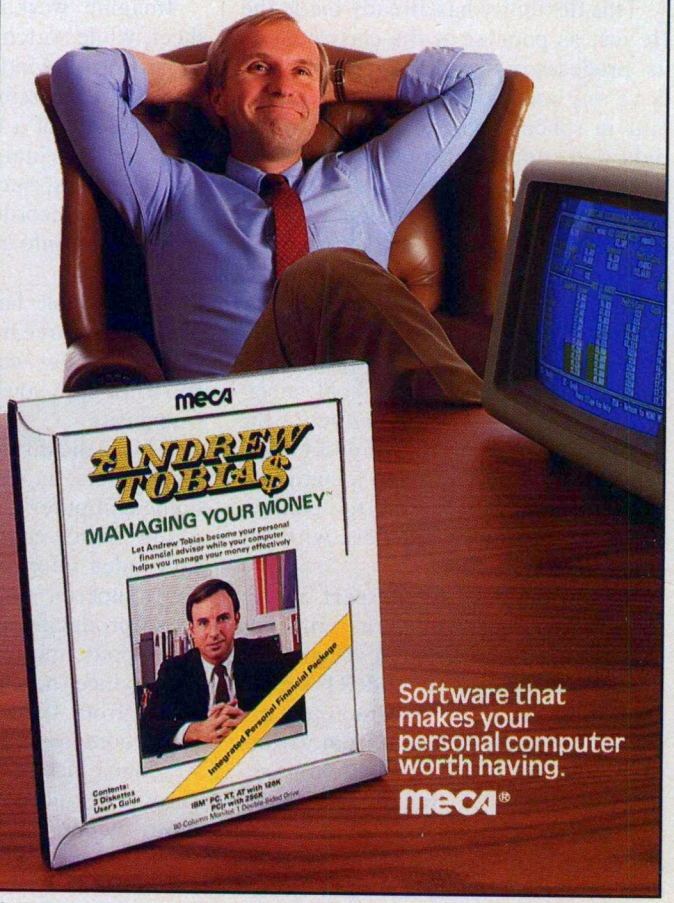

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crystal display (LCD). Under ideal lighting, an LCD can serve nicely, but good lighting is sometimes harder to find than a power outlet. The Apple IIc's optional LCD is no better or worse than the others, but it does benefit by not being built in.

Instead of making the IIc like a typical briefcase computer, which limits you to using the built-in LCD, Apple opted to give the IIc two separate video ports: a normal composite port and a multipin, multiuse port.

The Toshiba CZ 2094 can display two signals from different sources at the same time.

The composite port hooks directly to a monitor or VCR. The special 15-pin video port needs external circuitry, which Apple calls a docking module, to run any number of present and future video gadgets. The modules are quite small, smaller than a pack of cigarettes, and do not limit the IIc's portability.

At present, the RF modulator, an RGB adapter, and the optional LCD are the only available video add-ons for the IIc, but it will be easy to add a brighter flat-panel display, such as an electroluminescent or plasma display, as soon as one becomes economically feasible. Since all the circuitry is external, adding display options is easy.

The true genius of the Apple approach to portability is that the company expects you to be able to find some sort of monitor—be it TV, composite, RGB, LCD, or what have you—and it gives you a computer that runs with all of them. This expectation is in direct contrast to the Kaypro/Compaq philosophy of portability, which requires you to lug around a nine-inch CRT.

The add-on modules are designed not to restrict access to the primary composite port, and both ports are always enabled. So you can use two monitors at once, a big-screen TV for the folks in the back of the room and a green-screen monitor for the operator, for example. Anyone who has ever tried to demonstrate anything on a computer to a room full of people can appreciate this convenience.

The new liquid-crystal display uses the largest of the external-video-interface modules, but it still screws unobtrusively onto the same 15-pin port, leaving the composite port open for business. A short flat cable about five inches long attaches this module to the actual screen, which rests nicely in the vent slots atop the computer.

The LCD acts mainly as a last resort, if no other TV or monitor is available. Apple has been roundly criticized for the design of its flat-panel display, but the company doesn't deserve all the blame. The technology of flat-panel displays is in an interim stage and will undoubtedly improve. When it does, Apple may well come out with something else. Meanwhile, two third-party developers are already offering alternative LCDs for the IIc. Thunderbird Instruments of Phoenix, Arizona, offers C•Vue, and Nara Technologies of Santa Clara, California, is bringing out The Display. Briefcase computers from Hewlett-Packard, Data General, and NEC, to name a few, offer nothing better and are stuck with their built-in LCDs.

Until these experimental and exotic screens become more practical, digital TVs represent the current state of the art in video displays.

No Boob Tube

Companies such as Toshiba, General Electric, and Panasonic are using a new computer-chip set, designed by the German division of ITT, to unleash a new kind of monitor. Digital TVs are designed to accept simultaneous input from a variety of sources: regular UHF and VHF antennas, cable/satellite TV, videocassette recorders, home computers, and high-resolution RGB computers (see figures 1 and 2). True stereo sound processing, using internal or external speakers, completes the package.

Computer chips not only handle all these I/O operations, but they also digitize the signal, filtering it and enhancing overall picture and sound quality. Breaking down the image into zeros and ones has a few added benefits, such as dramatic zooms and freeze frames. One new model, the Toshiba CZ2094, can display two signals from different sources at the same time, one occupying the main screen and another occupying an adjustable-size corner window. Toshiba lent us an evaluation unit to match up with our Apple IIc, and we experienced several adventures in videoland.

First of all, composite connections remain the easiest on the Apple IIc. The sound is separated into the Apple's own speaker or out the earphone port to an external speaker, so a single-pin RCA-type patch cord is all you need. Color composite monitors do not, however, let you use the IIc's 80-column

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mode—the resolution is just not there. You'll need either the high-resolution Apple monitor or the RGB adapter and a suitable monitor.

The Toshiba bore all of this out. Eighty-column text was unreadable when we sent it through any of the Toshiba's three composite ports. Arcade games and 40-column text were fine, on the other hand. If you've made a dynamite Galaxians play, you can take a snapshot and freeze the action in an adjustable-size window, or you can mix and match the computer screen with regular TV. Needless to say, shrinking the computer's output into a five- or ten-inch-diagonal window doesn't do much for its resolution. You're better off leaving AppleWorks on the main screen and putting the ball game in one of the corners.

Hooking the IIc up to the Toshiba's or any TV's standard antenna jack requires a bit of work. First, Apple's RF modulator, which is slightly larger than a box of matches, screws into the IIc's 15-pin video port, just under the handle. The handle then folds down to provide a nice typing angle and room for the cables. The modulator is not only out of the way but also somewhat protected, and you might as well leave it in if you plan to use a TV often. The composite port is still free and available for simultaneous output.

Apple also provides a switch box, a common sight to anyone with a home video game. The Apple switch box is the same unobtrusive beige as the rest of the system and attaches the modulator to both your TV and outside antenna. An A/B switch allows you to go from one to the other. A newer color TV, such as the Toshiba, looks great, hardly discernible from the composite version (to which you can switch back and forth for comparison). Small black-and-white portables also work fine, but you should avoid using older color TVs.

What we really wanted to know was how well the IIc worked with an RGB monitor. Apple makes its own RGB color monitor, but we wanted to try out the RGB capabilities of the Toshiba CZ2094.

Two third-party developers are already offering alternative LCDs for the IIc.

Actually, the Toshiba has two RGB ports. One is an 8-socket plug for personal computers, and the other is a 21-pin connector for a teletext adapter. Teletext is used in this country only for advertising in hotels and so on, but it's supposedly catching on in Europe. We needed to be concerned only with port RGB-1.

We had an RGB adapter from Video 7. It's about the size of a pack of cigarettes and rests on the desk behind the computer. It doesn't screw directly on, as with the other modules, but plugs into the video port with a short cable. No problem there. As with any computer-interfacing job, the problem we encountered was in the cables.

The cable Toshiba furnished ended in a 9-pin joystick-like plug, and Apple was sticking to its 15-pin format. Both cables were too short, anyway. Thinking that such a mongrel connecting cable was not likely to exist, we bought similar connectors from Radio Shack and took out the trusty soldering iron.

We found a diagram of the Toshiba's pin-outs in the excellent *Owner's*

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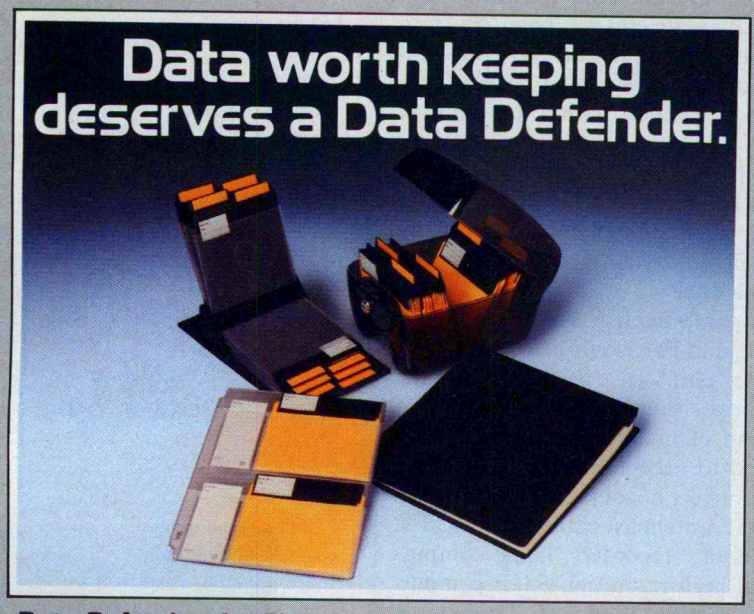

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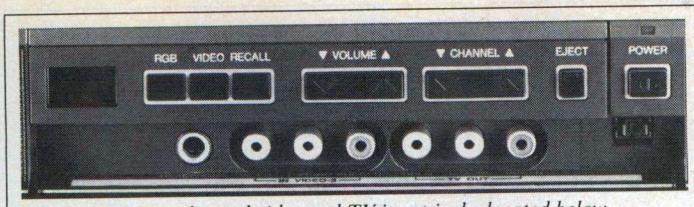

Figure 1: Commonly used video and TV input jacks located below Toshiba's front control panel

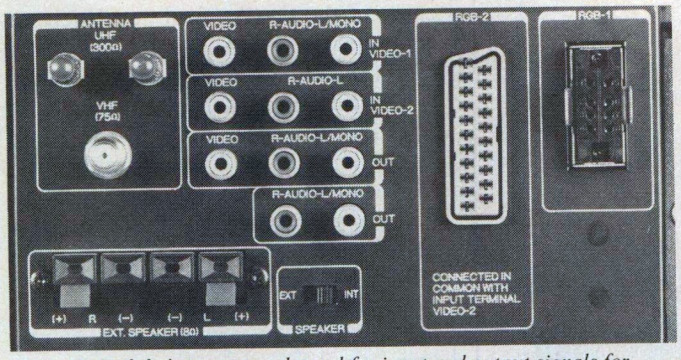

Figure 2: Toshiba's rear control panel for input and output signals for video, audio, and antenna

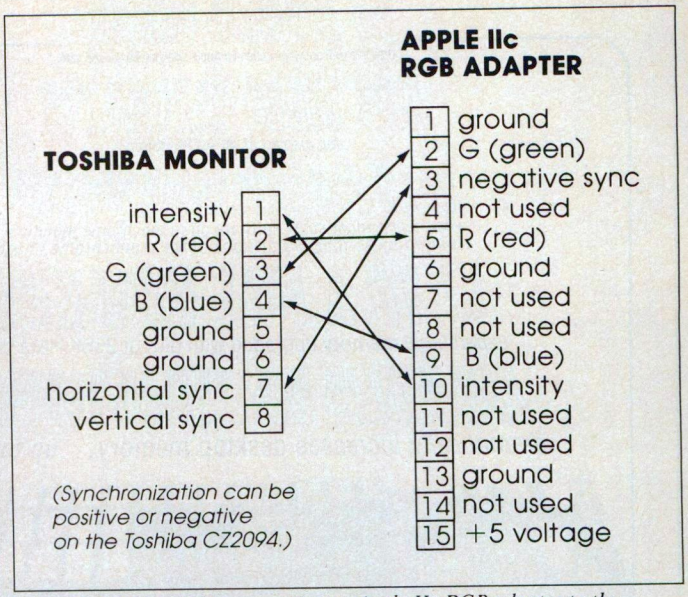

Figure 3: Pin layout for connecting an Apple IIc RGB adapter to the Toshiba CZ2094

Guide, but the Video 7 document neglected to mention pin-out assignments. We called Video 7 in Saratoga, California, and instantly got the information from Customer Service. As we'd thought, the signals were compatible, even if the cables weren't. We also learned that we needed to wire only five of the pins, which is always a relief when you're making your own cable.

The main pins for connecting an Apple IIc RGB adapter to the Toshiba CZ2094 are listed in figure 3.

The IIc worked beautifully with the digital TV. The colors vary slightly from composite, but that's to be expected. For the adventurous, Video 7 furnishes a disk full of demo and utility programs with the RGB adapter; the programs include commands that alter colors and offer video modes not found in the Apple IIc's ROM, such as 16-color high resolution with 80-column text. The adapter also has two easy-to-reach DIP switches to change the default text color that goes to the screen. The colors are white, green, blue, and amber, and they allow an RGB monitor effectively to mimic an 80-column monochrome display.

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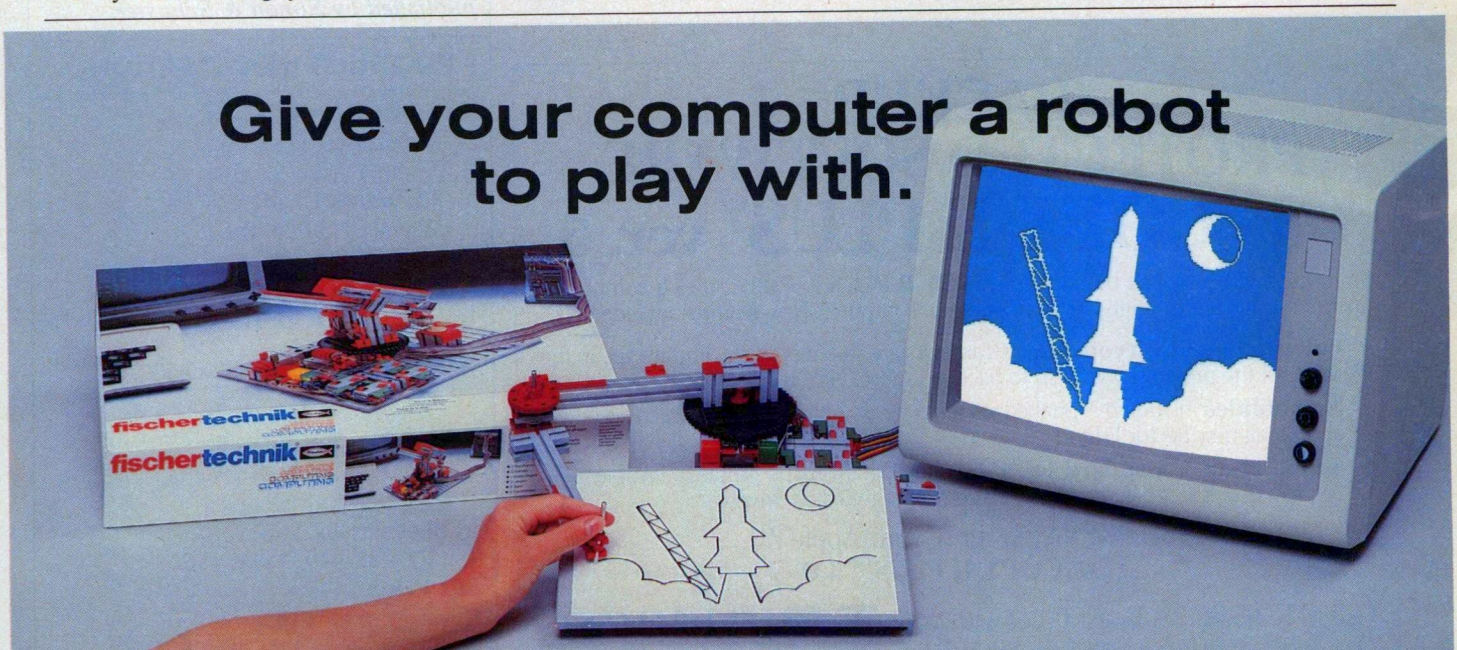

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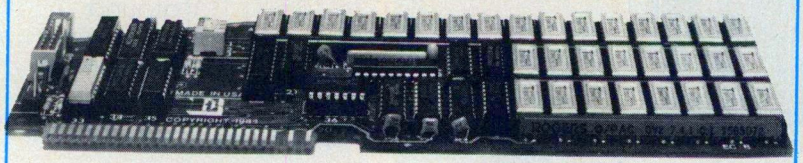

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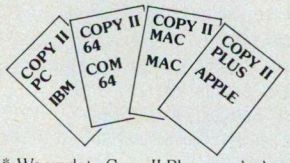

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John Vornholt is a free-lance writer in Los Angeles, and Ashley Grayson operates ADG, a high-technology marketing firm. They have recently coauthored a book, Computers to Go—A Guide to Briefcase Portables, *published by Simon & Schuster.*

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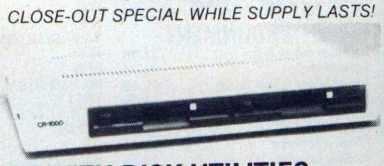

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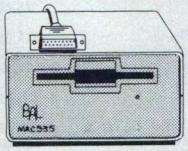

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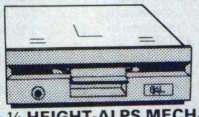

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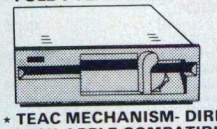

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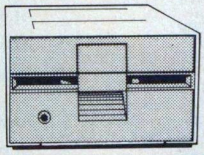

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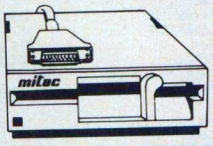

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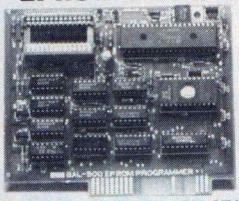

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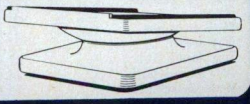

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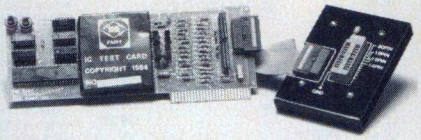

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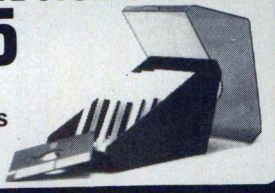

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You finally have bought your first hard disk, only to find that some of your programs don't work, and others are hard to run. Now what?

CATALYST IIe

Hard disks are becoming more popular these days as a result of falling prices. In fact, since the introduction of the Sider and other inexpensive hard disks, you may find it hard to be without one.

After you purchase your hard disk and begin saving all your programs on it, you quickly learn that all the copy-protected programs you own won't work. Furthermore, the programs that work on the hard disk are difficult to run. What's the solution? A hard-disk program selector called Catalyst IIe from Quark, Inc., can solve your problems quickly.

What's a Program Selector?

A program selector allows you to set up all your programs on the hard disk in a menu format. Then you simply select desired applications from the menu, and the program selector will execute them for you. When you quit an application, you end up back at the selector's menu. Therefore, you don't have to reboot the system each time you leave an application. Catalyst IIe even goes one step further and lets you install many programs that are copy-protected. You can also use it with CP/M programs if you have Advanced Logic Systems' (ALS) CP/M card and that company's special ProDOS software.

Installing Catalyst

Installing Catalyst on your hard disk is simple and will take you about 15 minutes. The first step is to install a console driver on your Catalyst disk when you're using a non-Apple 80-column card. Catalyst works with several third-party 80-column cards, including Videx and ALS 80. No console configuration is necessary when you're using an Apple or Apple-clone 80-column card. The next step is to configure the clock/calendar card, if your system has one. This step is not necessary if you have a Thunderclock, though. Once you have configured Catalyst for your hardware, you are ready to "catalyze" your hard disk.

Installing the system on your hard disk is simply a matter of booting the Catalyst floppy, inserting the Catalyst Installation disk, and pressing a couple of keys. The manual takes you through the entire installation process in a step-by-step fashion. The instructions are easy to follow and complete.

The Catalyst Installation disk automatically creates a subdirectory where ProDOS, BASIC, Convert, Filer, the Catalyst Editor, and the System Reboot are installed.

The program selector is now installed. Hereafter, you will need only the Catalyst master disk when you boot the system to access the hard disk.

Installing Application Software

Installing programs with Catalyst is easy, thanks to its Quark.Install program, which automatically installs third-party applications on your hard disk (see figure 1). Even more significant is that the program lets you install copy-protected software onto your hard disk. To copy an application to your hard disk, Quark.Install must be on that application's disk.

When you transfer copy-protected software, the Quark.Install program locks the program to the serial number of your Catalyst start-up disk. Since each Catalyst disk has a five-digit serial number, only your disk can operate the programs stored to the hard disk. In ad-

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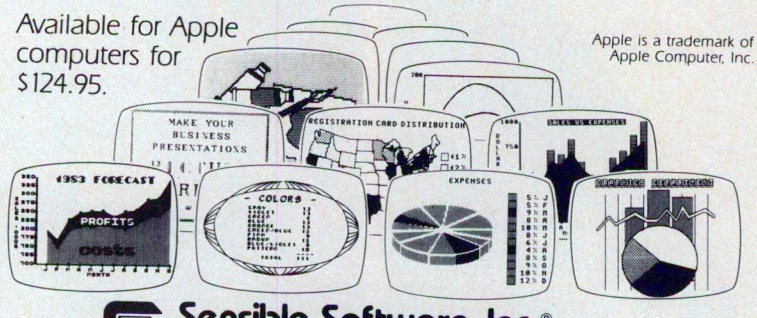

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CIRCLE 345 ON READER SERVICE CARD

dition, you can install the copy-protected software over again, but only with your serialized disk. Quark supplies a second backup disk in case you have problems with your Catalyst master disk.

Installing Programs Manually

Sometimes, when Quark.Install is not present on a disk or you are installing your own programs, manual installation is necessary. With a little practice, however, this procedure is easy to master.

The first thing you have to figure out is whether the program uses the BASIC interpreter or a custom interpreter. To make this determination, you look for the interpreter file, which is either Basic.System or any name with .System after it. This step is important because Catalyst handles the BASIC interpreter differently than it treats a custom interpreter. The ProDOS kernel and the BASIC interpreter are not to be copied, since Catalyst has already installed these programs during initial installation. Once you've determined what type of interpreter the program is using, copy the disk-based version to a subdirectory on your hard disk.

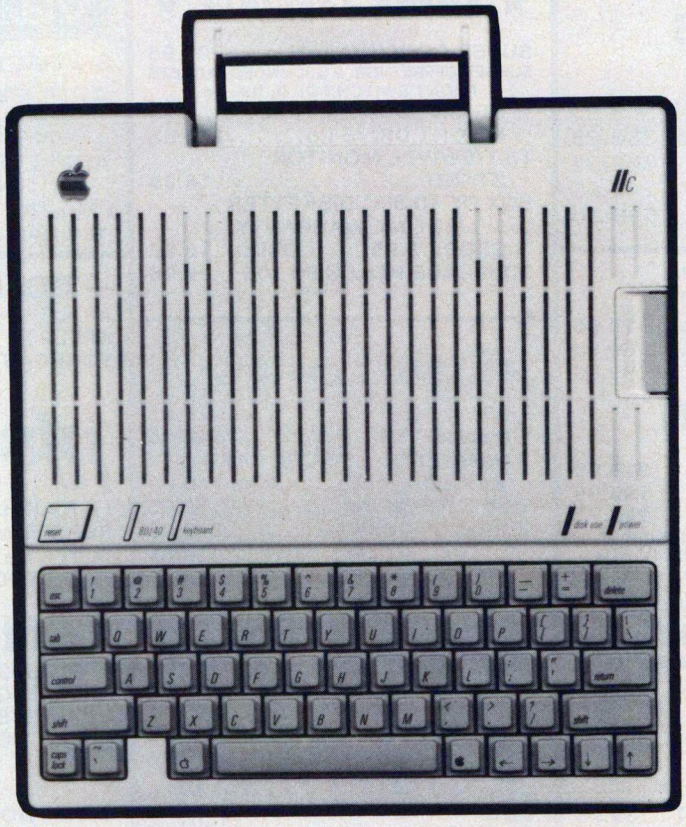
The critical part of this installation comes when you want to add your program to the Catalyst menu. For everything to go smoothly, you should have some familiarity with ProDOS file structure. If you don't, you can avail yourself of any of the good books now out on the topic, or you may want to see your local dealer. You use the Catalyst Editor to specify the program's display name, interpreter path, initial prefix, and program path (see figure 2).

You need only one ProDOS file and BASIC interpreter to run your entire hard disk, including all your BASIC programs.

You install your own BASIC programs in a similar manner, but you must be sure to specify the interpreter path as BASIC. Interestingly enough, you need only one ProDOS file and BASIC interpreter to run your entire hard disk, including all your BASIC programs in various subdirectories.

The tutorial takes you through the steps of manually installing a program, but if you are a novice ProDOS user,

640K



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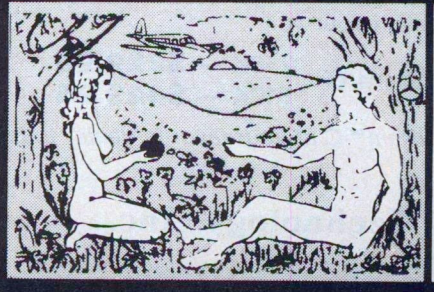

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Accounting Software with Catalyst

Using a hard disk is a good idea when you run accounting software on your computer, and Catalyst can be an effective aid when you use this type of application. It improves your maneuverability into and out of the system.

When you install BPI or Manzanita accounting software, make sure you are using the latest version of the ProDOS

Using a hard disk is a good idea when you run accounting software on your computer, and Catalyst can be an effective aid.

kernel and the Basic.System, renamed BASIC. by Catalyst. ProDOS versions earlier than 1.1 do not function properly with BPI or Manzanita software. You can upgrade your ProDOS system free of charge at your Apple dealer.

Problems occur when you install BPI software with older versions of the BASIC interpreter that were installed under Catalyst. Several accounting modules cannot function with interpreter versions earlier than 1.1. Other problems can arise if you do not install BPI within the Catalyst subdirectory on the hard disk. Neither of these problems is documented clearly, by the way, so be advised.

You cannot install the Manzanita system until you have the correct ProDOS version, but once you have it, installing Manzanita's Advanced Business Accountant accounting series is a snap. Manzanita uses the Miscellaneous Manufacturers entry in the Catalyst Editor to initialize the software to the menu. After initialization, you reboot the system with Manzanita and install the program onto the hard disk. The manufacturer states, "It's a painless procedure," and it is just that. After the installation is complete, you reboot with Catalyst, and the Advanced Business Accountant is operational.

The BPI General Accounting module works automatically with Catalyst, so there is no need for manual installation. The remaining BPI modules require manual installation, however. The BPI manuals take you through the installation procedure of these other

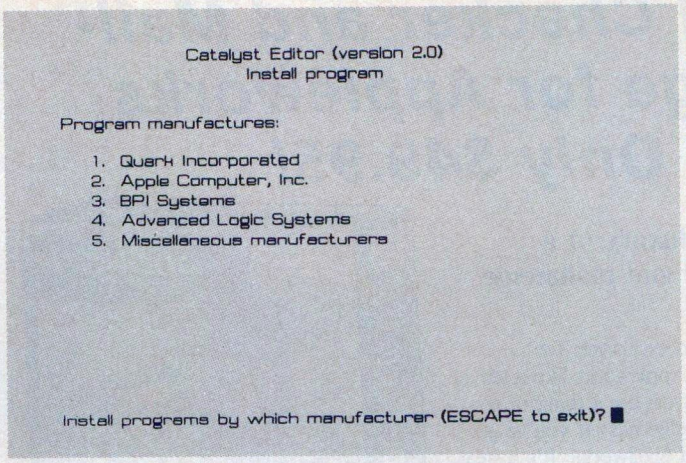

Figure 1: Many different manufacturers support Catalyst. If your program's maker is not listed in this figure, you should attempt to install your program with Option 5. If that doesn't work, manual installation will be necessary.

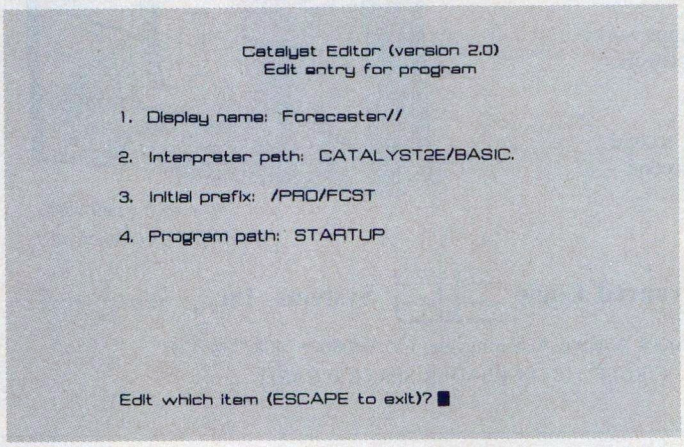

Figure 2: Adding your BASIC program within the Catalyst Editor. The Display name will appear on your Catalyst menu. Specify the BASIC interpreter within the Catalyst subdirectory as your interpreter path, which lets Catalyst control your program. The initial prefix tells Catalyst where to find the program, and the program path executes it.

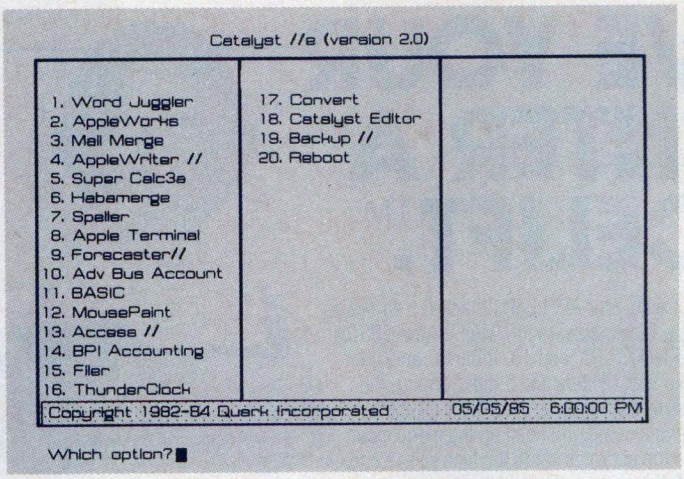

Figure 3: After you load all your programs on the hard disk, the Catalyst menu will look like this.

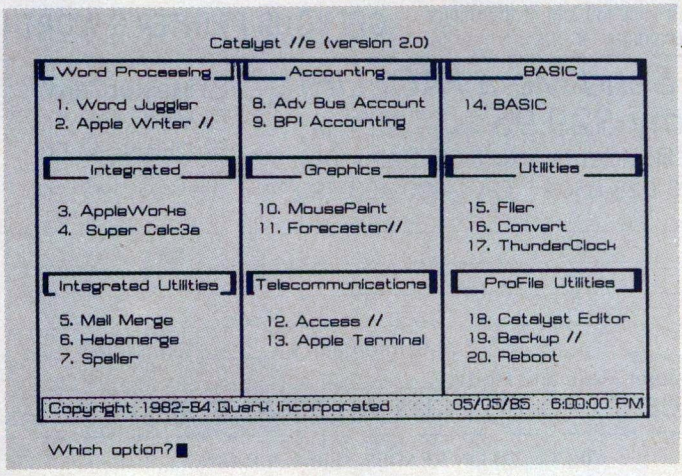

Figure 4: Here is the finished product that you can get with the Catalyst Editor.

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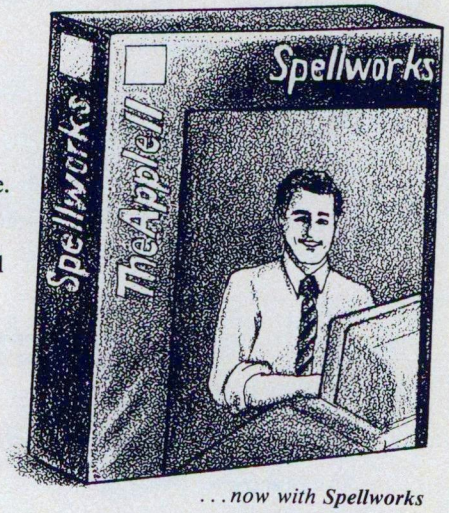

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modules with relative ease.

When you have finished installing all your programs, your master menu should resemble figure 3.

You can further modify the Catalyst menu in the Editor. By rearranging the programs into categories and adding titles, your master menu can look professional (see figure 4).

Catalyst IIe will not interfere with other programs that allow you to partition the hard disk with DOS or Pascal.

Quark's Catalyst IIe package is a boon for hard-disk owners.

Therefore, you can theoretically have four different operating systems (ProDOS, DOS, Pascal, and CP/M) on one hard disk.

The Catalyst package works with the AppleMouse II and a clock/calendar card. You can use the mouse only within the menu, to select a program. If you have a Thunderclock or other similar clock card, it automatically enters the time and date when you boot Catalyst, and you can use other clock cards that require minor installation.

Quark's Catalyst IIe package is a boon for hard-disk owners, who will appreciate the ability to install protected software, as well as many other types of custom applications on their hard disk. +

Editor's Note: *Between the time this article was prepared and the time it went to press, we found out that Quark has developed a new version of Catalyst that has a Macintosh-like interface. Look for coverage in next month's issue of* A+.

Greg Mainis is an Apple software developer and author of Introduction to ProDOS *(McGraw-Hill, 1985).*

PRODUCT INFORMATION

Catalyst IIe
Quark, Inc.
2525 West Evans, Suite 220
Denver, CO 80219
(303) 934-2211

List Price: $149; Apple III version, $199

Requires: Apple II, II Plus, IIe, IIc, or III; 64K RAM; hard-disk drive; 80-column or extended 80-column card; ProDOS

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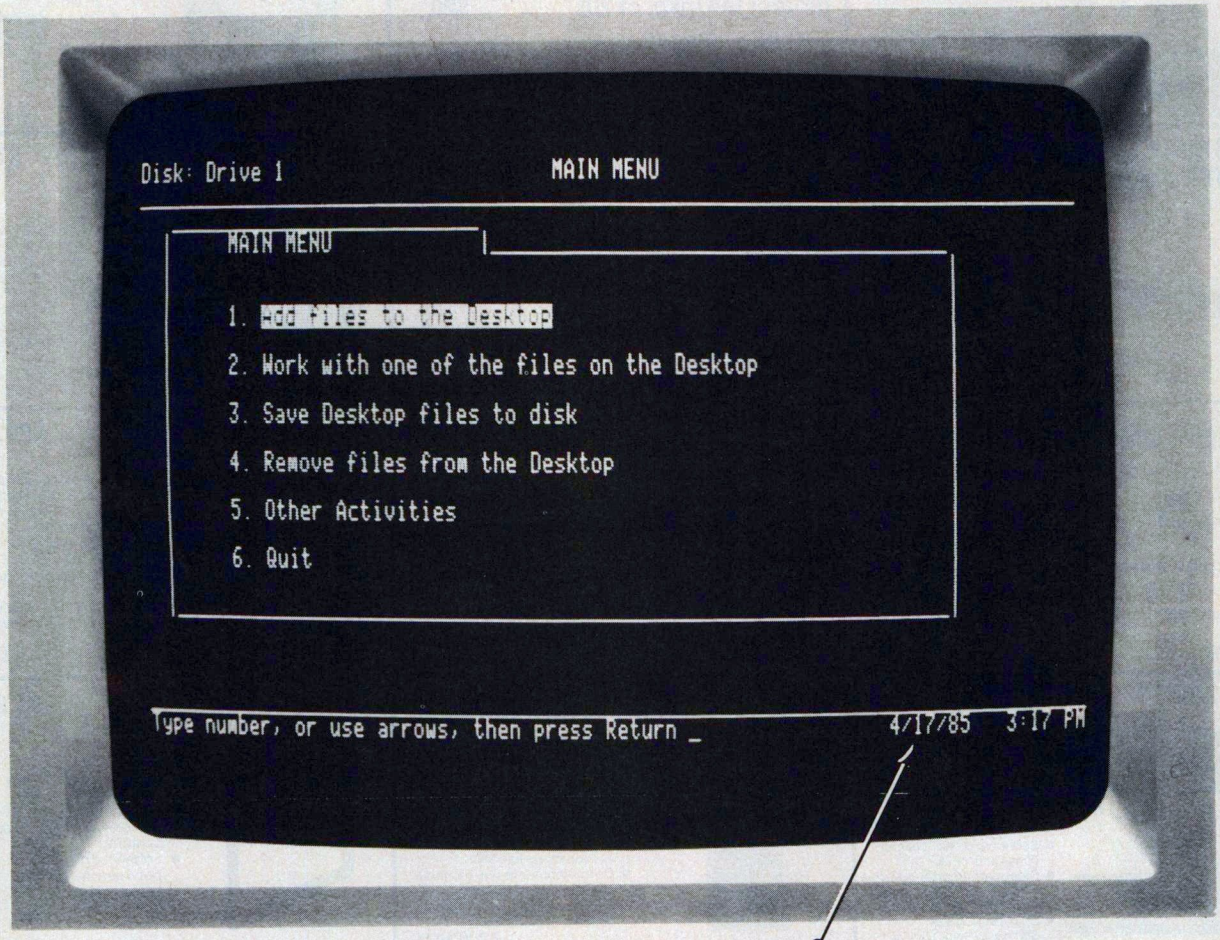

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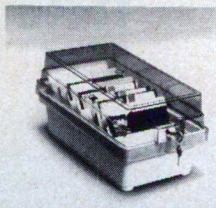

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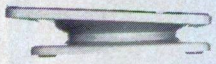

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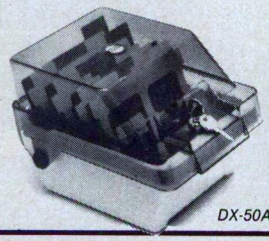

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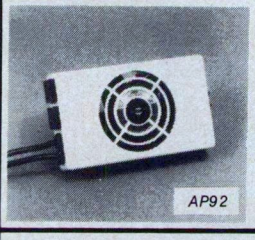

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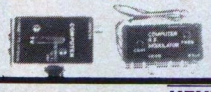

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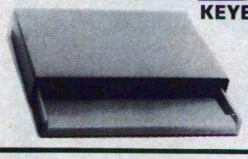

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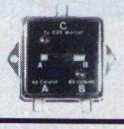

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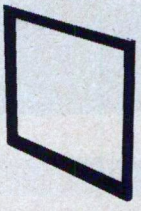

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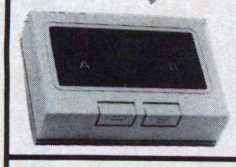

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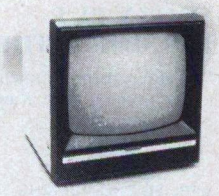

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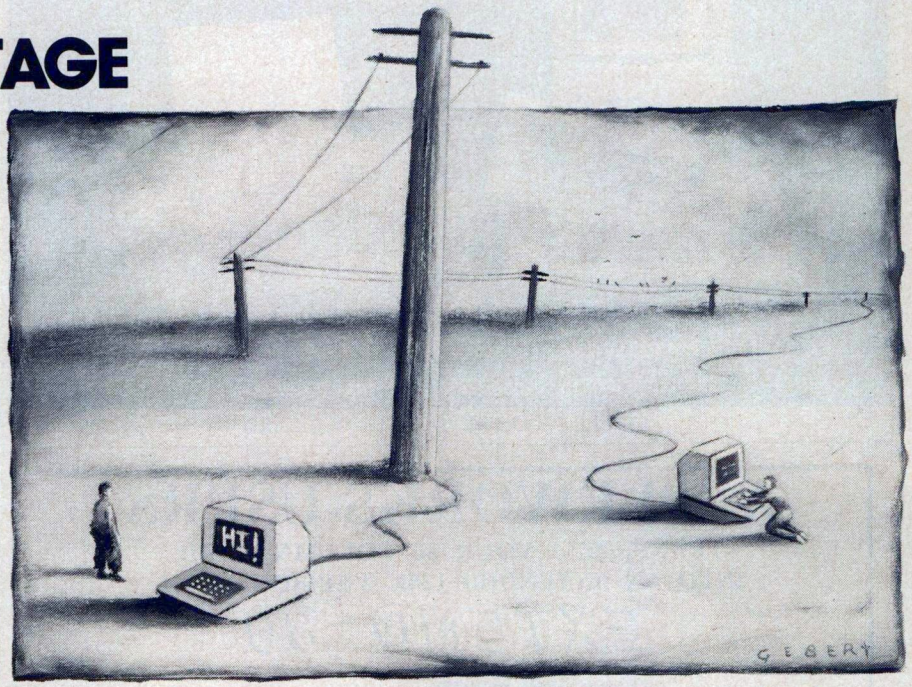

A question, telecommunications trivia fans: Just how many electronic on-line databases can you tap into with your Apple computer and a modem? The answer is quite a few, and this number increases with each passing month.

According to Paul Zurkowski, president of the Information Industry Association, a trade group established in 1969, approximately 2500 databases are available on-line today. He notes that overall industry sales were $15 billion in 1982 and that on-line businesses are growing at a 25–27% annual rate.

So where are all these databases? R.R. Bowker Company has published *The North American Online Directory 1985* ($75). It lists 1511 "machine-readable databases for public access" from 785 "publishers, associations, institutes, and other organizations." Cuadra Associates publishes a quarterly *Directory of Online Databases*, which lists 2600 on-line databases from 376 vendors. And these publications don't even take into account the thousands of bulletin boards across the country run by individuals and small companies.

PERSON-TO-PERSON

Of course, to access all those databases, you need a good telecommunications program. When I traded up from an Apple II Plus to a IIc, I also traded in my acoustic modem (from the Dark Ages) for a direct-connect AppleModem 1200 (a real renaissance, I assure you). Included in the box was a "modem utility program" called Apple Term II. It is an attractive program—simple to use, able to store and dial a dozen phone numbers, and just the ticket for fast access to new telecommunications services and bulletin-board services (BBSs).

Although a good first step, it is not very advanced, however—for example, it cannot upload or download files. Thus, when Person-to-Person from Trutec Software came for review, I was overjoyed. Here is an integrated communications program that features telecommunications, database, and word-processor functions in a Macintosh-like environment.

How many electronic on-line databases can you tap into with your Apple and a modem?

With this program, telecommunications information is kept on "cards," with a maximum of 1500 cards per file, and each card holds up to 512 characters. Person-to-Person requires a mouse and supports the AppleModem 300 and 1200, Hayes Micromodem II and IIe, Novation Apple-Cat II (with ROM), Transend SSM, and compatibles.

The point-and-click method of selecting functions is fast and smooth. One of the program's only problems is its inability to switch between 300 bps (bits per second) and 1200 bps. You can switch parity, data bits, stop bits, and other essential settings easily enough, but not the transmission rate—to do this, you must reconfigure the program.

The other trap is that you must place a > (greater-than sign) after the phone number to change from the Voice Only mode to the Terminal mode. When I neglected this apparently innocuous step, it resulted in quite a few attempts to hook into databases with only an ordinary telephone. Do you know how dull it is to talk to a carrier tone?

Despite these minor problems, the program works as advertised: It has automatic log-on, upload/download, macros, printer support, and searching capabilities. Its documentaiton is good to excellent. Person-to-Person retails

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AD-V features low advertising rates, automatic sales-lead support, sorting capabilities, BBSs, and electronic mail.

AD-V is menu-driven and allows you to search for goods and services by word, state, and ZIP code. The system provides the opportunity to narrow or widen your search. As with many databases that use a keyword-based searching system, the goods you seek sometimes appear under different keywords.

Small Business Service Bureau offers a free on-line demo. Be sure to read the "What's New" section, which is more helpful than the introductory material. Computerized "guided tours" are also available, in case you cannot fathom the method of navigating through the menu structure.

BBS RESPONSES

Back in the June 1985 issue of *A+*, I asked BBS operators who wanted to spread the word about their BBSs to send an E-mail or regular letter containing all the particulars. The first few responses have trickled in.

From Bill Beem: The Village, a 24-hour BBS, runs on an Apple IIe with a ProFile hard disk. New users can access a general message area and Apple section. Authorized users can explore sections on games, entertainment, and utilities, and 40–50 programs.

Bill also passes along the following tip: US Robotics will sell the Courier 2400-bps modem for $350, plus $5 shipping, to qualified sysops. Another company with a similar offer is Racal-Vadic, but it requires that the BBS be two years old. Thanks, Bill.

From Dave Haberle: Golfsoft, a BBS for golf enthusiasts, runs on an Apple IIe that has a Sider hard disk. Dave offers the following comment:

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Extra Features: Create new "dual personality" ProDOS/3.3 disks. MANY MORE 128K UTILITIES.

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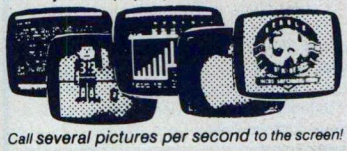

Call several pictures per second to the screen!

```
10 PRINT CHR$(21): COLOR=2:
   FOR X=0 TO 39 STEP 2: FOR Y=1
   TO 47 STEP 2: Z=Z=0: PLOT
   X+Z,Y: NEXT Y,X
20 POKE 37,255
```

GOSUB 94

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Double Hi-Res: Access 16 hi-res colors and 560 (horizontal) x 192 (vertical) pixels (*twice* normal resolution) on your Apple IIc or 128K Apple IIe.

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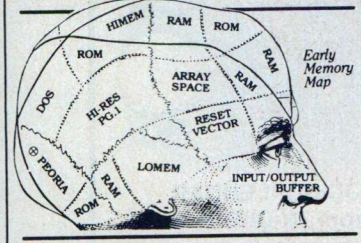
For the Programmer: 33 new commands for drawing, filling and manipulating double-res images: convert normal programs & pictures to double-res, save/load image sections, compress pix to 1/3 disk space, make double-res "slide shows"...

Great Reviews: See Jan-85 *A-Plus* Magazine.



Early Memory Map

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$34.95 *(any version of Apple II: DOS 3.3 & ProDOS)*

2-way Scrolling: Program listings and disk catalogs scroll up *and* down, making file names and program lines easier & faster to find. Machine language listings & hex-ascii dumps scroll 2 ways too.

Better List Format: Each Applesoft program statement on a new line for faster program reading.

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Disk Search: Find any word or phrase on a disk or in a specified file. Repair zapped disk bytes that might cause malfunction. Instant disk maps too.

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Machine Language Sort: One CALL in an Applesoft program will alphabetize a list of words—*super-fast!* Sorts string-arrays—*A$(1), A$(2),* etc.

Converter: Changes any Applesoft program line to machine code that can be executed with a CALL.

Text Typer: See or print ProDOS text files immediately without having to boot your word processor.

More: Put time & date of save in your catalogs. Catalog ALL directories on any ProDOS disk. Make any Applesoft command work like any other...

Machine Language Editor: Type in programs from magazines, and insert and delete at will (no mach. lang. knowledge required). 2-way-scroll memory scanner too. Very useful & educational.

Plus ALL-NEW APPLE TIPS! How to use memory like an extra disk drive, How to disable the LIST command so it says "File Locked", How to disable or swap ANY command, How to rename "Startup", How to Personalize ProDOS catalogs...

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THE Apple Program Editor: GPLE is our "Global Program Line Editor", *THE* most popular, efficient way to edit Applesoft programs. GPLE works like a word processor for Basic program lines.

Insert and Delete: Now you can quickly make changes to your programs. No more awkward "escape-editing" to make changes. No more hassles with extra spaces in quote statements. No more slow "cursor-tracing" to the end of a line.

Search and Replace: Find every occurrence of a string or variable in your programs. Or *replace* any word with any other. For example, change all X's to ABC's, or all "HORSE" strings to "COW".

Function Keys: Define your own Apple "function keys". For example, ESC-1 can Catalog drive 1, ESC-N can clear the screen and type your name and address, etc. Customize your Apple with a set of functions that perform any set of tasks you want.

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$39.95 *(any version of Apple II: DOS 3.3 & ProDOS)*

Program Packer: D Code squeezes wasted and unused bytes out of Applesoft programs, saving valuable memory and increasing speed & efficiency.

Automatically combine program lines, shorten variable names and/or remove REMarks. Uncover wasted program lines that can't possibly be executed.

Auto-Proofreader: Typing errors are caught as you type, and *before* someone runs your program. Or you can simply type "CHECK" to scan an *entire program* and uncover potential crashes.

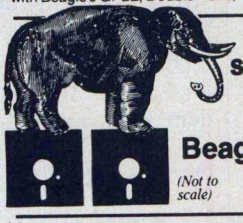
Super-Trace: When a program stops or crashes, type "DUMP" to see the last 10-10,000 statements and line numbers that were executed, in the order executed—an instant program *history.*

"Live" tracing too, with each executing statement, line no. and selected variable value in a window at the bottom of screen.

Breakpoints: D Code lets you set up de-bug "breakpoints" so your program stops when you want it to. For example, you can ask that your program be stopped when X gets set to 99, or the 3rd time a particular statement is encountered.

Lightning-Fast Find! Find strings & variables *fast*—large programs searched in about *2 seconds!* This feature alone is worth the price of D Code.

GPLE Compatible: D Code remains "transparent" to your programs and is fully-compatible with Beagle's GPLE, Double-Take, ProntoDOS, etc.



Most software stores carry Beagle Bros disks.

(Not to scale)

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3. 40- and 80-Column text screen text.

All kinds of Apple images can be transfered to your printer with absolutely no programming knowledge. *OR* you can call Triple-Dump's print routines from within your own Applesoft Basic programs.

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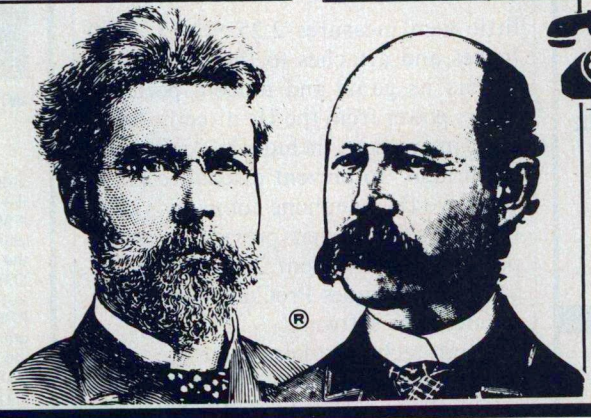

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CIRCLE 263 ON READER SERVICE CARD

"Thanks for your columns; your interest in spreading the word about telecommunications; and, in general, fun." Thanks, Dave—may your signal never waver.

From Bill Hoppe, Jr.: TKM's Mini BBS caters to a general audience. Bill notes, "Enjoyed your column; keep up the good work." He also suggests BBS hunters consult *The Computer Phone Book* by Mike Cane.

From Jay Desio: Ace-Net is the official BBS for the Louisiana Association of Computer-Using Educators. Ace-Net, which runs on a Franklin Ace 1200 computer with X-10 hard disk, includes education articles and a download section.

TELETIPS

This section deals with news, views, and breakthroughs in the telecommunications world. It also offers a quick overview of new features added to services we have already reviewed. I obtain the information by culling the numerous press releases and periodicals that streak across my desk each day.

New Products

Prometheus has unveiled a 300-bps modem for the IIc called the ProModem 300c. So what, right? Wrong! This

For $950, you can purchase an antenna, low-noise amplifier, solid-state receiver, and demodulator.

little gem measures 2.25 × 2.75 × 3.0 inches and attaches to the rear of the IIc via its game and modem ports. It draws power from the IIc directly, has a built-in speaker, includes a "call waiting bridge" to prevent disconnection if you have the telephone company's call-waiting service, and provides a game port. The ProModem 300c retails for $199 and includes ProCom-A telecommunications software.

High-tech fans, here come the satellite receivers. Satellite Broadcast Network sells a compact satellite dish and operates a financial-data service for investors seeking up-to-the-second information. For $950, you can purchase an antenna, low-noise amplifier, solid-state receiver, and demodulator. The data service covers stocks, commodities, options, news, weather, sports, and other specialized information.

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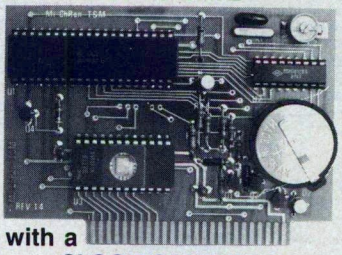

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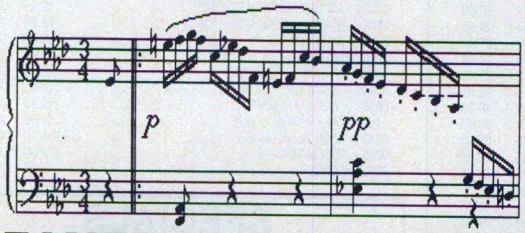

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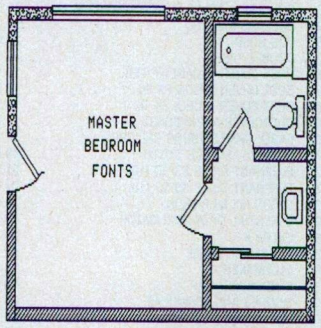

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CIRCLE 272 ON READER SERVICE CARD

CompuServe, has rejected a $72.5 million takeover offer by former CompuServe Chairman and CEO Jeffrey M. Wilkins and a group of Ohio investors. H&R Block president and CEO Henry W. Block contends CompuServe "continues to play a key role in our strategy for corporate growth and profitability."

Indeed. Block notes that since H&R Block acquired CompuServe in 1980, it has invested $20 million in the subsidiary. Unaudited pretax earnings of CompuServe for the first 11 months of 1985 were up approximately 50%. CompuServe boasts more than 200,000 subscribers.

Nuke 'Em Till They Glow II

The results of the Second Annual "The Day Before" National Nuclear War Card Game Tournament, run by Flying Buffalo over the CompuServe and MCI networks, are in. More than 70 players representing 18 cities participated. For the second year in a row, no winner emerged.

More than 1 billion people perished after 1030 megatons of nuclear warheads were dropped, and another 105 million died as a result of germ warfare. The final blow came when Oklahoma City dropped a 100-megaton bomb from a B-1 bomber on Scottsdale, Arizona. The bomb set off a nuclear stockpile, starting a chain reaction that annihilated the world.

The coveted "Supergerm" trophy went to Santa Ana, California, for having the largest population before Earth turned into an asteroid belt. Next tournament: April 12–13, 1986.

The Assassins

The following story appeared, in lengthier form, in the February 1985 issue of *Digital Review*. Kudos to Contributing Editor Vin McClellan.

Rumors persist that some hacker BBSs have a security file in which trusted members can look at TMI blueprints.

A group of three boys—one 15-year-old and two 16-year-olds—who called themselves the Assassins went on a six-month computer-crime spree in Atlanta, Georgia, carting off $250,000 worth of hardware and an inestimable amount of proprietary corporate data. When apprehended, they said they did it for fun.

What does this have to do with telecommunications? Well, one of the victims was the Institute of Nuclear Power Operations (INPO), a cooperative set up by the nuclear-power industry to suggest safety and security measures for nuclear plants. The Assassins stole two diskettes, labeled TMI, that were said to hold highly confidential data on the Three Mile Island nuclear plant in Pennsylvania.

An INPO spokesman said nothing classified was stolen. Rumors persist, however, that some hacker BBSs have a security file in which trusted members can look at TMI blueprints.

Service Starts

Ziff-Davis Publishing, the folks who bring you *A+*, *Creative Computing*, *Digital Review*, and several other computer magazines, has started Computer Industry Daily (CID). It offers five-day-a-week international coverage of the industry.

Computer Industry Daily will be 6 to 12 pages long each day and will be distributed over the MCI Mail network. The daily will also be available via a computer and modem. The base subscription price will be $1500 per

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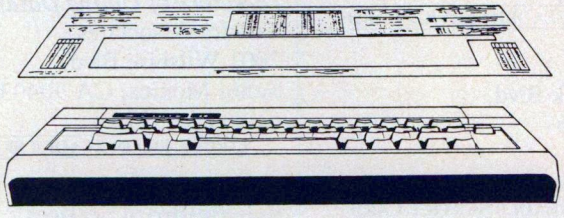

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year, with rates reflecting delivery method.

Gannett Company, publisher of the national newspaper *USA Today*, 85 daily newspapers, and 35 nondaily newspapers, as well as owner of 6 TV and 16 radio stations, has entered the telecommunications field with USA Today Update. It consists of two services: Hotline, which offers national, international, business, and financial news; and Decisionline, which focuses on specific professions and industries.

LOGGING OFF

The end of the column comes all too soon. So much is happening in the telecommunications industry, the information hardly fits in the space allowed. As always, I keep my ear to the ground to bring you the best and latest developments for fun and profit. Be with me next time, when the column turns in a truly galactic performance. In the meantime, direct your telecommunications news, comments, questions, and critiques to my CompuServe PPN 70210,750 or to *A+* directly. I'd also like to invite you to stop by the *Creative Computing* SIG (PCS-22). ✚

Russ Lockwood is an assistant editor at Creative Computing *and former staff writer for The New York Times Information Service.*

▸ FURTHER INFORMATION

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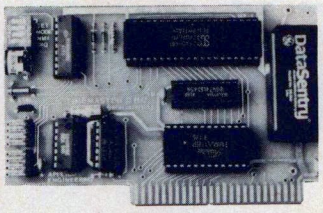

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BRAND A	NO	NO	YES	NO	NO	NO	NO	NO
BRAND C	NO	NO	NO	NO	NO	NO	NO	NO
BRAND M	NO	NO	NO	NO	NO	NO	NO	NO
BRANDP	YES	YES	NO	YES	NO	NO	NO	NO
BRAND S	NO	NO	NO	YES	NO	NO	NO	NO
BRAND T	YES	NO	NO	NO	NO	NO	YES	NO

Full emulation of all other clocks. Yes, we emulate Brand A, Brand T, Brand P, Brand C, Brand S and Brand M too. It's easy for the H.O. to emulate other clocks, we just drop off features. That's why the H.O. can emulate others, but none of the others emulate us. The Timemaster II H.O. will automatically emulate the correct clock card for the software you're using. Of course most programs will use the Timemaster II H.O. in its native mode, but it's comforting to know that you won't have to worry about compatibility problems. You can also give the H.O. a simple command to tell it which clock to emulate. This is great for writing programs for those poor unfortunates who bought some other clock card.

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SUP'RTERM	MORE	NO	NO	NO	NO	NO	YES	YES
WIZARD 80	MORE	NO	NO	NO	YES	NO	YES	YES
VISION 80	MORE	YES	NO	NO	YES	NO	NO	NO
OMNIVISION	MORE	NO	NO	NO	NO	NO	YES	YES
VIEWMAX 80	MORE	YES	NO	NO	YES	NO	NO	YES
SMARTERM	MORE	YES	NO	NO	NO	YES	YES	NO
VIDEOTERM	MORE	NO	YES	NO	YES	YES	NO	YES

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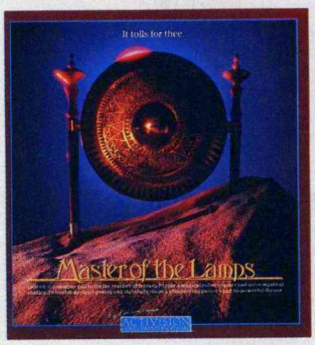
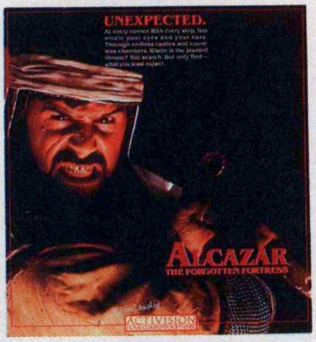


A spectacular journey through space and time. The king is dead and you must help the young prince prove his mental and physical worth. Reassemble the magic lamps and return the mischievous genies to their rightful place and the prince to the throne. Designed by Russell Lieblich and Peter Kaminski.

Created for the Commodore 64/128, the Apple II series and Atari 800, XE, XL and compatible computer systems.

"...no limit to the complexity..."
—Marc Randolph/USA Today



Enter Alcazar. The crown jewel of castles in a mysterious moorish landscape. To reach the coveted fortress, you must venture through a broad countryside of ancient castles. But beware, each is filled to the turrets with fantasy, magic and danger. Designed by Tom Loughry.

Created for the Commodore 64/128 and the Apple II series.

"The unknown surprises lurking behind closed doors keep you playing...on and on."
—Computer Entertainer Newsletter

An underground energy plant powers all of North America. But, somewhere deep within its core, a tiny glitch threatens a transcontinental blackout. You must assemble a force of skilled robot commandos, investigate the problem and repair it before the shutdown activator counts down to zero. Designed by Creative Sparks.

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"...Road Race is now the best racing game on the market."
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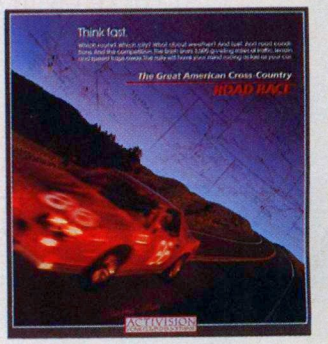

Strap yourself in! You're about to start the race of a lifetime. A high speed, coast-to-coast rally up, down and across three thousand grueling miles of changing weather, changing terrain and traffic, traffic, traffic. Monitor changing road conditions, speed, fuel, RPM's, destination times and, of course...your police radar detector. You just may drive yourself into the top ten finisher board at the end of the race. Designed by Alex DeMeo.

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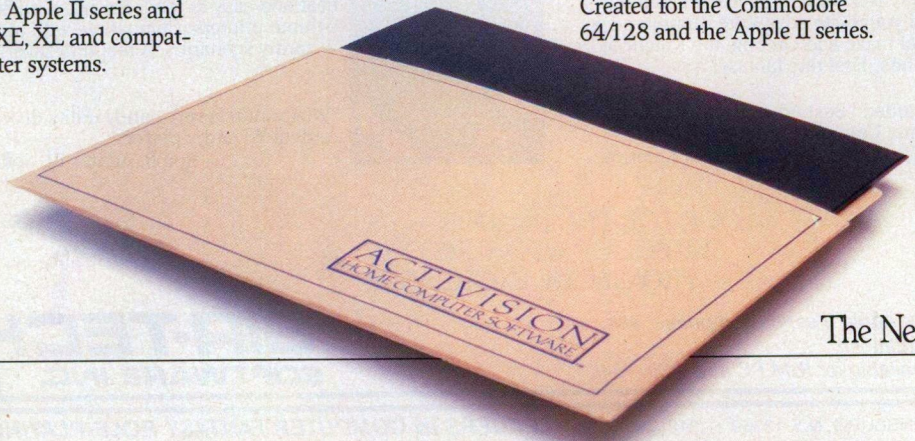

The Next Generation.

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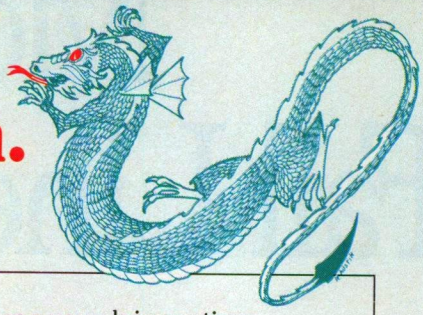


It's the biggest game in town

Our dragon, of course, is Wizardry—that unique series of computer recreation programs designed for Apple users who are seeking the ultimate "big game" challenge.

Since its debut, Wizardry has been the best-selling computer game of its kind.

For a very good reason:

Because Wizardry is more than just a game, more than a diabolically clever maze.

Wizardry is a complex world of variety and depth. A world of richness and pleasure.

Packed with suspense, full of surprises, Wizardry is enchanting—a compelling diversion that turns your leisure time into prime time.

Wizardry is powerful and sophisticated. A simple command system, 3D maze displays and superb programming provide you with month after month of involvement and satisfaction.

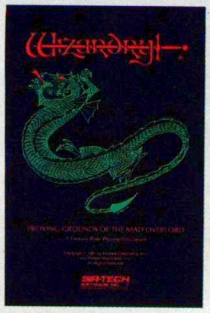
Four years old and still growing, the game is already recognized by critics and game lovers as a classic.

Simply stated, Wizardry is the finest fantasy role-playing computer game you can buy.

Set your sights on the best. Track down Wizardry—the biggest game in town.

Enter the World of Wizardry®

A Classic Encounter

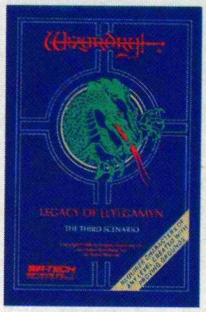


Proving Grounds of the Mad Overlord

The First Scenario

Unlike any other game you have ever played. A fascinating 10-level maze full of monsters, sorcery, traps and treasures. As you gain skills, the characters you create grow stronger, richer, wiser and better able to survive. The final goal is elusive. Your experience . . . unforgettable.

Twice voted "All Time Most Popular Computer Program" —Softalk Readers

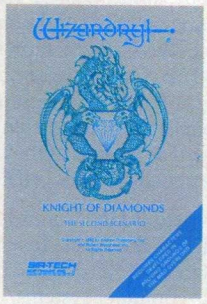


Legacy of Llylgamyn

The Third Scenario

A spellbinder that advances the classic traditions of Wizardry. Find the great dragon L'kbreth and save the people of Llylgamyn. Includes full screen maze display and Windo-Wizardry, the revolutionary pop-up window graphics system. Requires brave adventurers of any level developed in PROVING GROUNDS.

". . . A Landmark in Graphics Advancement" and "The Best Yet" —Softalk

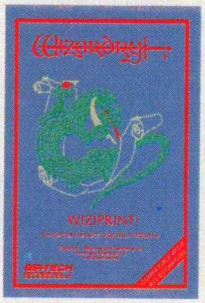


Knight of Diamonds

The Second Scenario

This classic journey should only be attempted with those Wizardry heroes who have attained the 13th level of ability in PROVING GROUNDS. Their challenge—and yours—to adventure through a six-level maze and become the Knight of Diamonds. First-rate fantasy!

Awarded "Best Adventure Game for the Home Computer"
—Game Mfrs. Association of America



Wiziprint

Character Statistics Printout

A helpful utility program that prints the possessions, attributes and known spells of all your Wizardry characters. Quick, neat and easy-to-read. For use with 80-column printers. Compatible with all Wizardry scenarios. A real timesaver!

"Wiziprint is a very handy utility disk for ardent Wizardry players"
—Roe R. Adams III, Softalk

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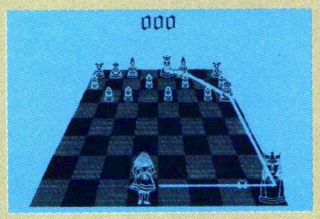


She knocked off the pawn and was zeroing in on the king when . . . 'ZAP, Pow,' and she had this funny floating sensation. 'That's all right,' said the mouse.

EVER FALL DOWN A RABBIT HOLE?

"What a curious feeling," said Alice. "I feel like I'm a queen—yet, yet, I'm only three inches tall."

"Well you are," said a voice behind her. "But don't worry. I'll get you through this safely."

"Oh my goodness," said Alice. "Who said that? And what do you mean, 'through this safely'? I'm in no danger, am I?"

"Not really," said the voice. "Just hang on tight and watch out for those dark knights. They're the ones that make the crazy moves. And stay off the bishops' diagonals, and don't sweat the pawns, and for goodness sakes, don't put yourself at a right angle to a rook."

"You've got to be kidding," said Alice. "I can't remember all that. Who are you? Where are you? Please come out, or I'll cry."

And just then she would have, but the voice came back, soothing and firm and definitely in control.

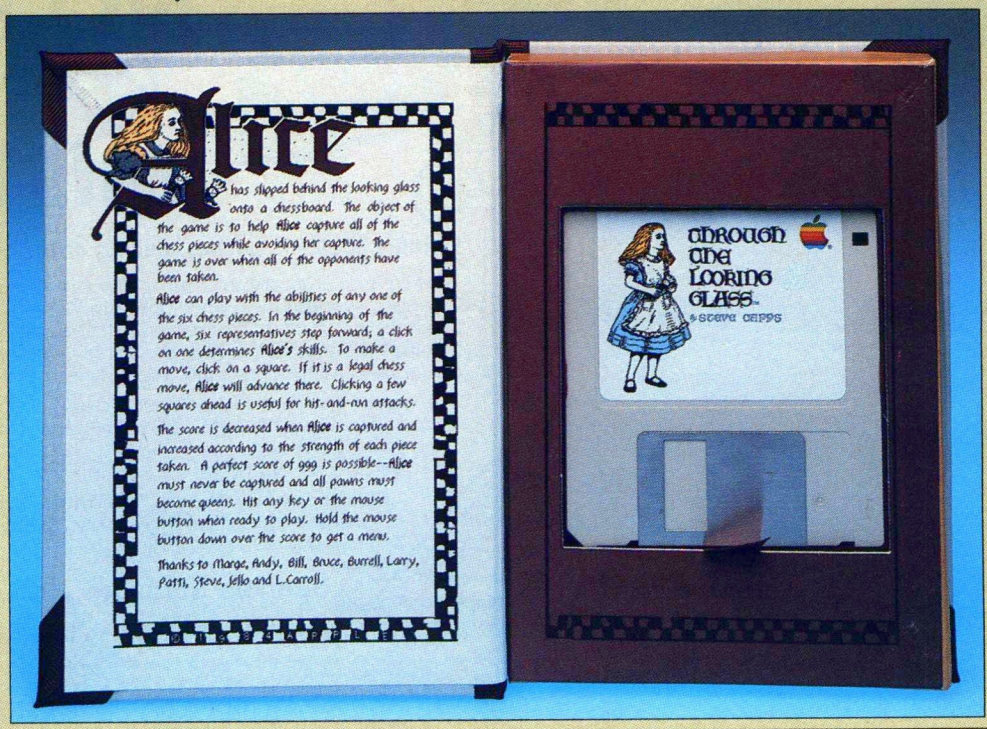
"Don't worry, kid. Just leave this one to Mac-Mouse. I can shake this crew."

And then there was a knight in front of her and she pounced and the knight was gone and a bishop was to her right and she got the bishop and a pawn was just behind her and with a little stutter step she skipped backward, knocked off the pawn, was zeroing in on the king when . . . "ZAP, Pow," and she had this funny floating sensation.

"That's all right," said the mouse, "we wracked up 168 points that time. Now let's just study the board a second."

"Oh, mouse, that didn't hurt. But I'm scared. I've been dropped down rabbit holes and taken before the Queen of Hearts and teased by the Cheshire cat and . . . ."

"Cat? Cat! Don't men-



tion that cat. He keeps the menu. Tells you when to start a new game. Hides behind the scoreboard. Don't worry about him. Just stick with me, kid. We'll get through this."

"Through what?" demanded Alice, stamping her foot. "I want an answer."

"OK, OK," said the MacMouse. "You see, there's this guy called Steve Capps who works for Apple Computer . . . ."

"What's a computer?" asked Alice.

"You don't need to know. All you have to know is that this Capps is a cool guy who gives thanks to people named Marge, Andy, Bill, Bruce, Burrell, Larry, Patti, and Jello for their help. They decided to put you on this chessboard and see how you'd do if you had to move the same way a chess piece moved and, if at the same time you moved, the other chess pieces started attacking you."

"Oh, I guess that could be fun," said Alice, "if you like being attacked. But won't I get bored after a while—I mean, after I get real good?"

"Talk to the cat," said MacMouse. "He has some real surprises in store for you behind those gleaming eyes. For variations on the game that will drive you crazy, you just select one of the eyes, the nose, or the mouth. And if you really want to do something different, follow the instructions and redraw the chess pieces with MacPaint, but copy your original first."

"Oh," said Alice, shaking her head up and down, even though she didn't know what MacPaint was. Then she paused, tapped her toe, and thought a little. "But I won't get bored, Mouse, because I don't even know how to play chess."

> 'But I can't do that,' said Alice, and she began to cry.

"You don't have to," said MacMouse. "All you have to know is the way the chess pieces move. Then you have to get them before they get you."

"But I can't do that," said Alice, and her lip curled up and she began to cry, and the mouse felt sorry for her.

"Don't worry, kid. That's why I'm here. I'm a chess ace. And even if I'm not, we can always call on that old Cheshire cat to slow the game down for us. Hey, we'll whip 'em, kid. And we'll show the world what a great game machine the Mac can be and how mousin' around is fun for something more than spreadsheets and . . . "

"What's a spreadsheet," asked Alice, by now convinced that she must have fallen into a new Wonderland—and, indeed, she had.

Greg Stone

Through the Looking Glass
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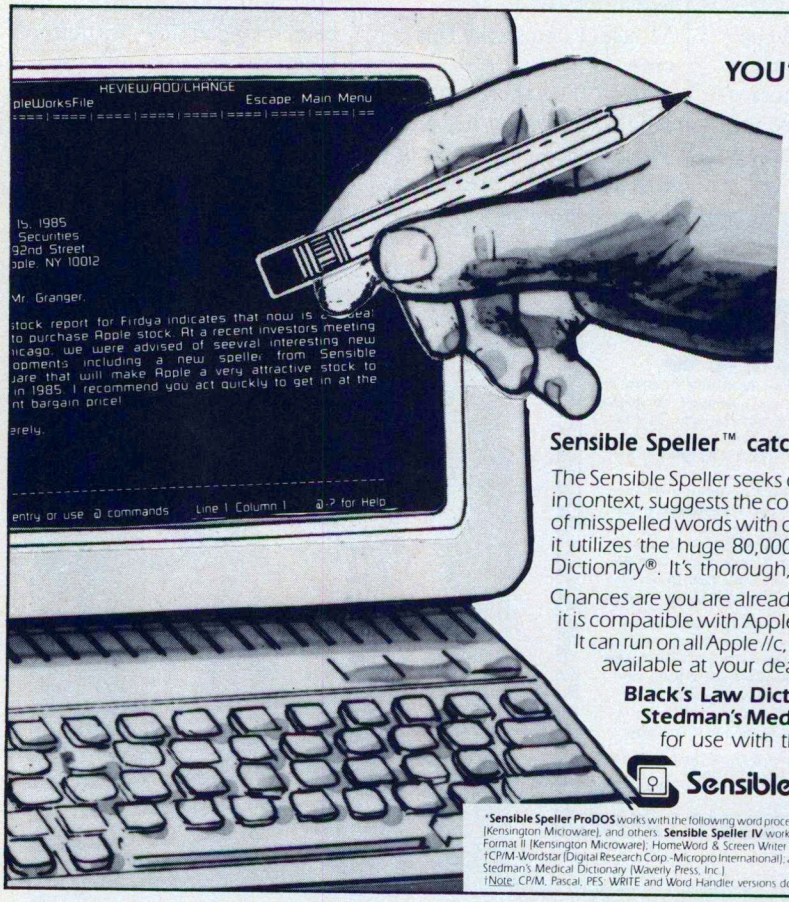

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CIRCLE 227 ON READER SERVICE CARD

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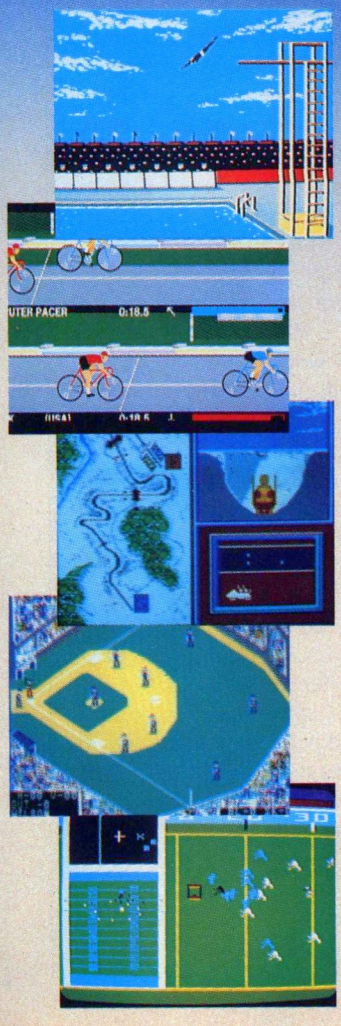

Games you beat are good dust collectors.

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With Epyx games, every time you boot up, it's a whole new ball game.

Or Olympic event.

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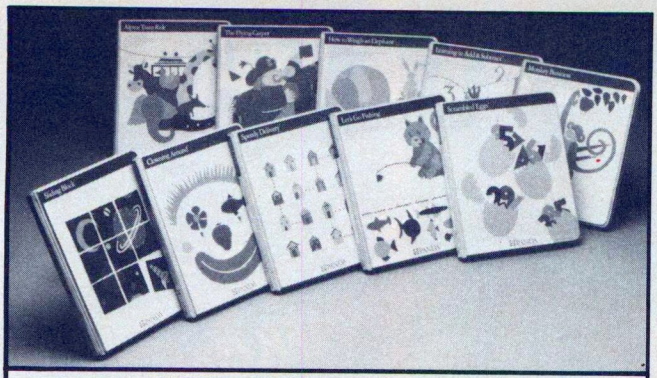

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THAT'S entertainment

SOUND EFFECTS BEST FEATURE

At a time when Infocom and Trillium are pushing the frontiers of interactive-fiction games, along comes Random House with an adventure game out of the Stone Age. The Alpine Encounter is so primitive that my best advice is to pass it by in a hurry.

I shouldn't blame Random House completely;

after all, it's only the publisher. The real raspberries go to a company called Ibidinc, which programmed the game and copyrighted it in 1983.

Spy Setting

The setting is right out of a James Bond movie. An evil organization called Vodac (read Spectre) has stolen a Chinese Ming vase and the plans to a new U.S. missile. Sino-U.S. relations will collapse without the return of the vase, and U.S. security is threatened.

One thin lead points to an elegant ski resort in the Alps—Alpenhof. The inside man is agent 487, who poses as an exchange student. You have 12 hours to find out what 487 knows, recover the vase and plans, and nab the Vodac agents.

As you progress through the adventure, fine graphics—some with animation—appear on the screen. Exquisite two-voice music, created with a synthesizer, provide some of the best sound effects ever in an adventure game.

So much for the endearing aspects of the game. Unfortunately, this promising start ends all too quickly. You are battered by an unforgiving parser, dulled by inadequate descriptions, and boxed in by inane limitations.

I admit it. I am spoiled by the Infocom and Trillium parser structures that accept full sentences and provide limited intelligence. Somehow I cannot go back to primitive two-word commands. I cannot abide typing in eight variations of an action—all of which should work but do not. In short, The Alpine Encounter parser structure is state-of-the-art 1983, not 1985.

The inadequate descriptions occur because the disk is packed with graphics. There isn't enough room on the disk to include descriptive paragraphs à la Infocom or Trillium. Even after you piece together clues from several sources, characters remain one-dimensional, and the setting never exudes the sense of elegance it deserves.

Finally, the program limits you in more ways than you can shake a ski pole at. Let me give the best (or worst) example I found. Secret agent 487 misses dinner. He ate lunch, but missed dinner. All of a sudden, without warning, he feels dizzy, passes out, and is taken to a local hospital for treatment of an eating disorder. Game over.

Death by Hunger

Look, roughing up the bartender for information and accidentally killing him and getting arrested may be acceptable. Getting locked in a hotel vault and dying from lack of oxygen might be logical (although James Bond has escaped from worse situations). And I can certainly buy running into a

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, Inc., 1985

tree on the ski slopes and losing precious time as the infirmary patches me up. But death by hunger?

And if that's not enough, a skiing arcade game is placed in the middle of the adventure. That idea did not work in Rendezvous with Rama (Trillium), and it does not work here either.

Ibidinc or Random House or whoever is responsible for this mess started out with an excellent idea and situation: a spy thriller at a ski resort. The graphics are good and the music is marvelous. Unfortunately, it is all downhill from there.

Russ Lockwood

The Alpine Encounter
Random House
201 East 50th Street
New York, NY 10022
(800) 638-6460
List Price: $39.95
Requires: Apple II, II Plus, IIe, or IIc; 48K RAM; one disk drive
CIRCLE READER SERVICE NO. **420**

VICARIOUS DESTRUCTION

A philosopher-type friend of mine remarked recently that the bad thing about modern technology is that it is making war look like *fun*—just another giant video game, only this time played for keeps.

"A good point," I replied. And then I sat him down in front of MicroProse Software's F-15 Strike Eagle, a flight-simulator type of war game, where you are the pilot of THE WORLD'S MOST ADVANCED FIGHTER AIRPLANE (it says here), a high-tech F-15 all-weather air-superiority and ground-attack fighter, including all major flight weapons and information systems. The F-15 also simulates the modern air-combat environment with numerous enemy aircraft, radar-guided missiles, infrared missiles, air-to-air missiles, and ground targets. In other words, not really the best circumstance for winning friends—but for making enemies, ho-boy!

To my philosopher friend's credit, he was not seduced by the simulation of modern air combat and was able to retreat with his morality intact. For the rest of us, however, I'm not so sure. F-15 Strike Eagle is a devilishly seductive piece of work. You have a pilot's-eye view, both forward and backward, and a complete control panel. You have guns, missiles, bombs, long/medium/short-range radar, electronic jamming, flares to confuse heat-seeking missiles, and an engine that can hit Mach 2.5 on the straightaway. Downhill, it's a little faster.

Actually, the F-15 isn't an airplane at all. It's two jet engines with a pilot attached. It doesn't need wings at all—you just point it and go. The wings are just there to hang bombs and missiles from. The F-15 carries enough firepower to barbecue Rhode Island. You could overthrow a small government with one of these planes.

When you first boot up the game, it asks you for an authentication code. The codes are scattered throughout the instruction manual in tiny hard-to-read boxes marked TOP SECRET—a way, I suspect, to foil copying schemes. Without the authentication, not all the craft's equipment works, so you will definitely need the manual close by. By the way, it's a very well written manual, quite complete. (If, by chance, you do make a copy of the game, it will boot—but nothing at all on the plane will work. Instead, it will report a complete hardware failure. Nice touch that.)

The game lets you play on four different levels. Arcade (which is not a realistic simulation; it's for beginners), Rookie, Pilot, and Ace. There are seven different missions: Libya (1981), Egypt (1973), Haiphong (1972), Syria (1984), Hanoi (1972), Iraq (1981), and the Persian Gulf (1984).

Hmm.

Maybe my philosopher friend was wrong, after all. Maybe if we could get some of our world leaders to sit down and play F-15 Strike Eagle and a few other war games, they would have so much fun playing on the computers that they wouldn't have to think about playing for real. (Well, I can dream, can't I?)

In any case, if you decide that playing a combat simulation as clever and accurate as F-15 Strike Eagle does not present a moral or philosophical dilemma to you, then be prepared to spend a lot of time spreading death and destruction across the skies of America's enemies.

Joystick, Steel Nerves

You'll need a one-button joystick, a combat helmet, nerves of steel, a box lunch, and a lot of endurance. If you like war games—and considering recent history, a lot of people seem to—you'll have a lot of fun with this one.

David Gerrold

F-15 Strike Eagle
MicroProse Software
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List Price: $34.95
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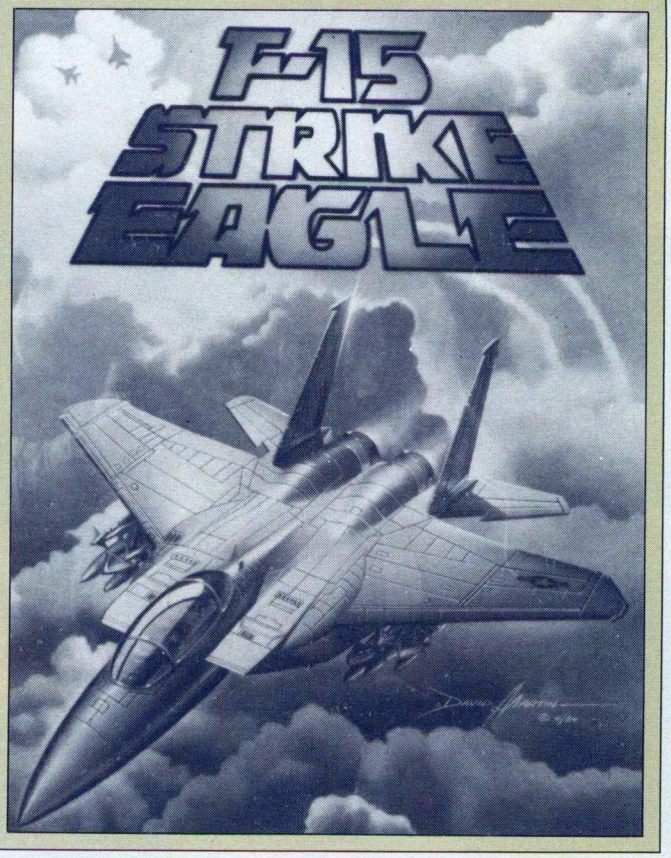

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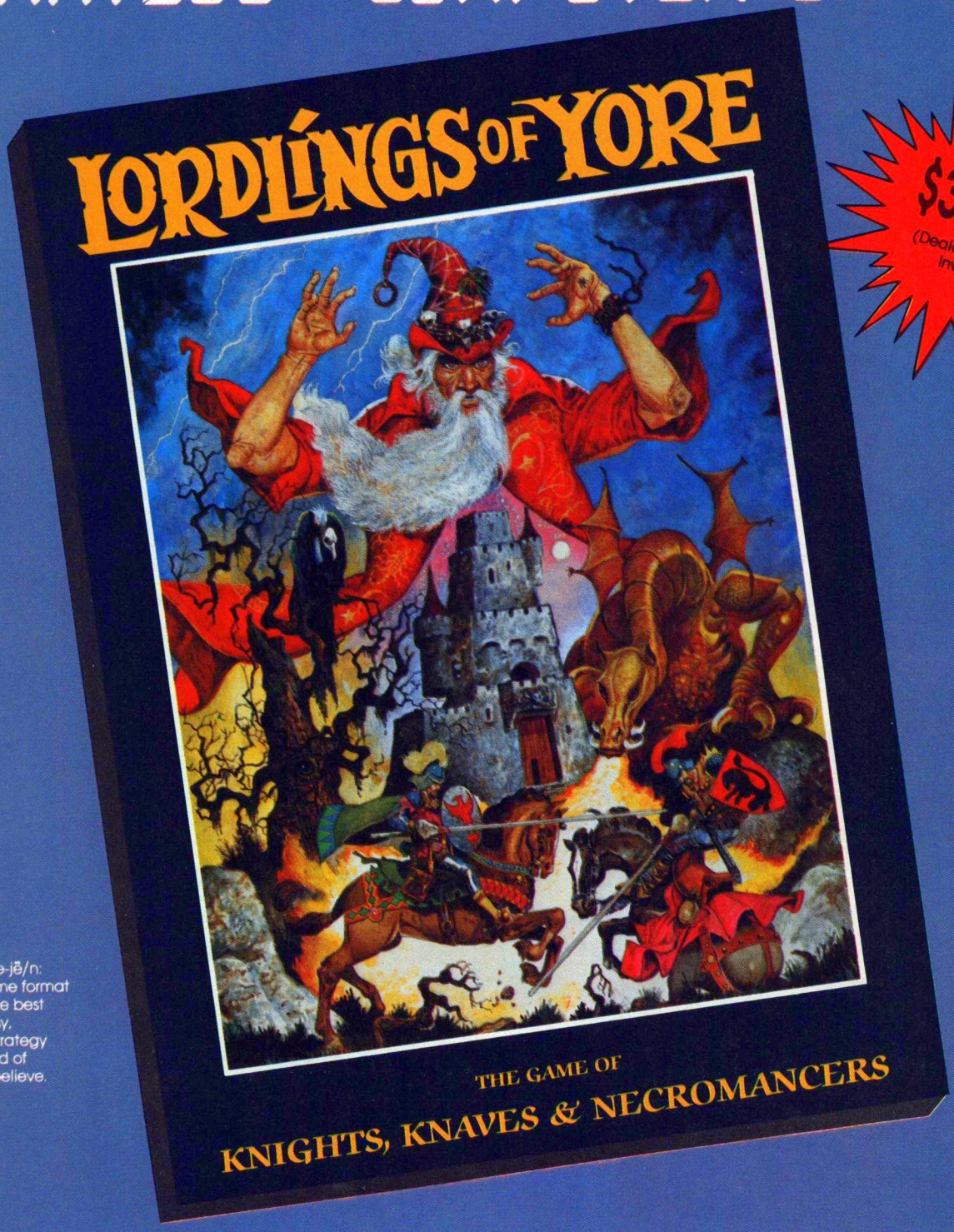

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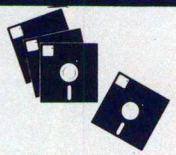

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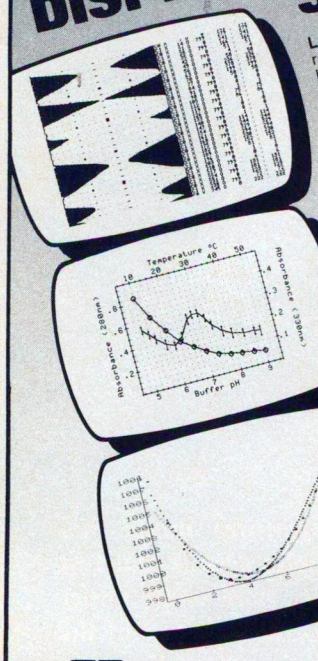

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THAT'S entertainment

CONQUERING ARTHURIAN SHIRES

Softlore Corporation heralds Lordlings of Yore as "the game of knights, knaves, and necromancers." How true, for this fantasy strategy game for one to four players challenges your ability to lead armies, control land, and use magic.

As a lordling (a duke or baron) in Arthurian Britain, you control one of four shires (the English version of a county). The shire is eight hectares by eight hectares (squares); contains villages, farms, mountains, forests, and plains; and is populated by 5000 peasants. At your side is a powerful necromancer and a handful of knights and men-at-arms.

The object of the game, quite simply, is to conquer all four shires. For the most part, that means subjugating the other lordlings with armies backed by magic. Each peasant pays one gold piece in taxes, and you use the tax money to "buy" knights, men-at-arms, and magic spells. You must balance your offensive thrusts into enemy shires with defensive parries against invasions, counteract magical attacks, cope with random events, engage in diplomacy, and keep your peasants happy lest they revolt.

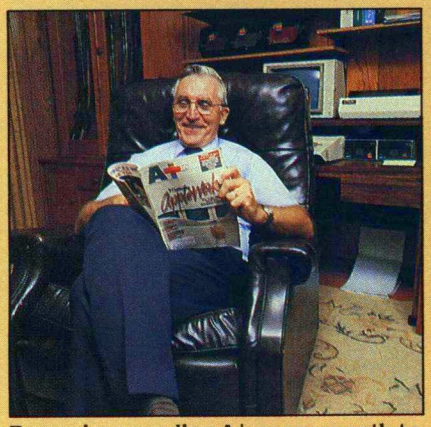
As you can see, this is a pretty tall order and makes Lordlings of Yore a pretty long game. When you pit four players against each other, it can take many hours, if not days, before one player and then another falls, and then the last two lordlings slug it out for the title of Lord of the Realm. Even against three computer opponents, a good game takes a solid evening.

Unfortunately, the game mechanics are a bit cumbersome by current standards. Compared to the scrolling capabilities in Strategic Simulations games, scrolling in Lordlings of Yore is downright

How A+ reader Benjamin Tabler won a Macintosh... It could happen to you!

Reading A+ Really Pays Off

One night, last October, while reading his 11th issue of A+, Benjamin Tabler took a step that brought good fortune into his life: he voted for the "Best Software of the Year." All he did

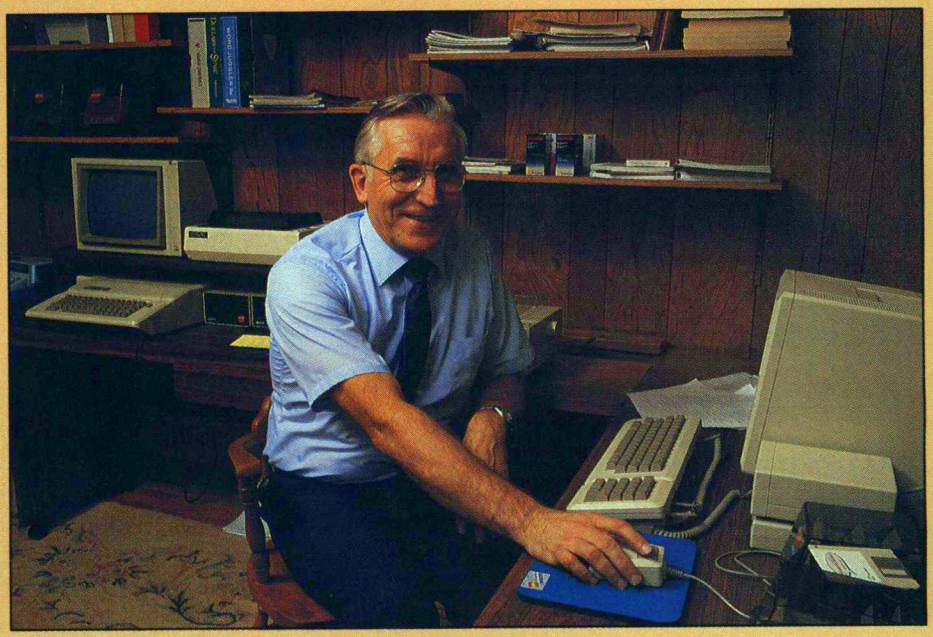


Ben enjoys reading A+ every month to decide what new products he should buy for his Mac and Apple IIe.

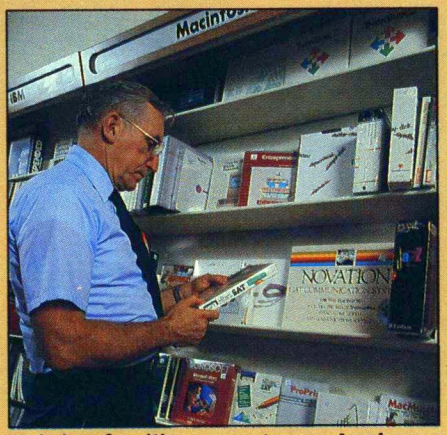
was list his favorites on the Readers' Choice Software Poll Ballot he found inside A+.

He sent in his vote... it automatically entered him into our special sweepstakes... and he won a spanking new Macintosh.

Lucky Ben!



Reader's Choice Winner Ben Tabler, a Sr. Systems Engineer in Silver Spring, Maryland, uses his new Macintosh to prepare business correspondence, write reports, and analyze his finances.



This is a familiar scene to any Apple owner. Checking out the software that's compatible with your machine at your local retail computer store. Here Ben takes a look at what his dealer, Computer Mall in Annandale, Virginia, has in store for his Mac.

Computer Mall owner Stephen Phail gives Ben a hearty handshake in congratulating him on his good luck in winning a Mac from A+.

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crude. You can look at only one shire at a time. Thus, if you have armies invading another shire, you cannot see their position or strength until you finish buying knights and casting spells. Softlore calls this obscurity "fog of war." I do not quite buy that. I think it is more "fog of programming." This criticism does not imply that the game is impossible to play—far from it. It means that the game could have had a more elegant method of providing information about your forces.

The more you play, the more you understand how the military, economics, terrain, and magic tie together. For example, you'll want to concentrate your forces into one army before storming a castle. At the same time, you must make sure this large group is not the target of a fearsome blast spell (which destroys all forces in a hectare).

Lordlings of Yore is a sophisticated strategy game, and I found myself glued to the Apple for hours. The wizard-summoned dragons and storms, diplomatic banter, outright bribery, economic conflicts, and military decisions all make this a fascinating game.

Russ Lockwood

Lordlings of Yore
Softlore
8714 Wellesley Manor
San Antonio, TX 78240
(512) 691-2800
List Price: $39.95
Requires: Apple II, II Plus, IIe, or IIc; 48K RAM; one disk drive

CIRCLE READER SERVICE NO. **422**

HIDEOUS HAPPENINGS IN HUXLEY

Quick—which city has the greatest number of crimes per capita? It's none other than the fictional town of Huxley, the setting of the new detective/adventure game Felony, CBS Software's sequel to its popular Murder by the Dozen.

Felons have been running rampant throughout Huxley, killing, kidnapping, stealing priceless artifacts, and vandalizing city landmarks. As in Murder by the Dozen, you assume the role of a "mystery master," a member of the mayor's special task force. You have been recruited to aid the ineffective Micropolis Police Department in cracking 12 baffling cases. As you travel through Huxley's 28 buildings, you will have to seek out and unmask arsonists, blackmailers, embezzlers, gangsters, and terrorists, as well as a goodly number of murderers.

The crimes each count as single games and take about an hour to solve. The program lacks a save-game feature, so you have to work on each crime in a single sitting. Although you can play them in any sequence, you should complete the mysteries in order, because information you uncover in early cases can help you solve later ones.

While working your way through a miasma of alibis, false leads, and red herrings, you will need the Micropolis crime computer. Always at your disposal, it provides case histories,

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- On-board output buffer amps can drive 5 MA
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- User programmable output ranges are 0 to 5 volts and 0 to 10 volts

The D/A section contains 8 digital to analog converters, with output buffer amplifiers and all interface logic on a single card. On-card latches are provided for each of the eight D/A converters. No D/A converter could be easier to use. The on-board amplifiers are laser-trimmed during manufacture, thereby eliminating any requirement for off-set nulling.

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The I/O manual includes many programs for inputs and outputs.

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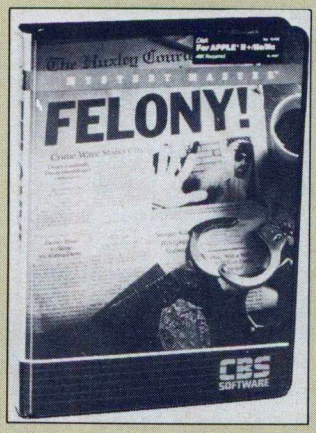
gives autopsy and laboratory reports, and guides you in the search for clues and evidence.

The game package comes with a police manual that contains the rules of play, Mystery Master worksheets (hint: take notes!); and two reference notebooks, one with clues and the other with solutions (both are encoded, to discourage cheating).

The crimes are not too hard to figure out, and the solutions are logical and interesting. Felony is quite different from the Infocom mystery series, and it's much easier. As you progress through the games, Felony's crime computer always gives you a menu of choices, which limits your actions to selections on that menu.

The cases in Felony can accommodate one sleuth at a time, but up to four players can compete against



each other to become the first to come up with a solution. The crime computer keeps track of how much time each officer takes to complete an investigation and, at game's end, awards one of 12 sleuth ratings—from First Class Detective to Total Turkey.

Basically a text game, Felony includes some effective color graphics to enhance the look (the game works well too on a monochrome monitor). The only indispensable screen is a high-resolution map of the city, to which you will have to refer occasionally as you plan your route around the town. (To speed the game up a bit, you can avoid looking at the map, once you've become familiar with the geography.)

CBS recommends the game for ages ten and up. In playing Felony by myself, with a group of adults, and then again with a group of young teenagers, I found that I had fun with it alone but wished I were playing with others; the adults-only group was impatient with the slowness of the game and its slightly simplistic style; and the teenagers liked it the most. So I heartily recommend it for the lower age range.

In addition, CBS seems to be correct in its assertion that Felony has considerable value as an educational tool. Playing Felony can build reading comprehension and foster logical and deductive reasoning skills.

Donald Oliver

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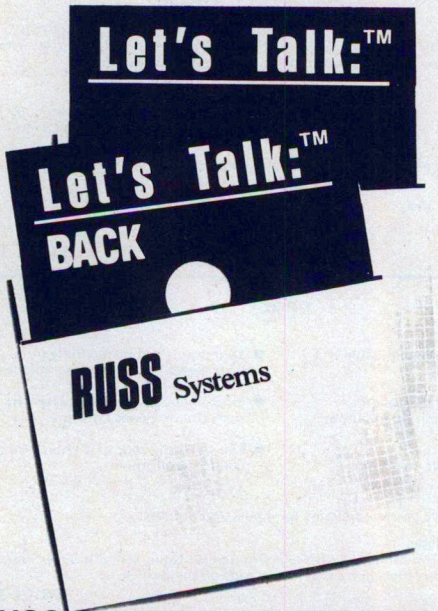

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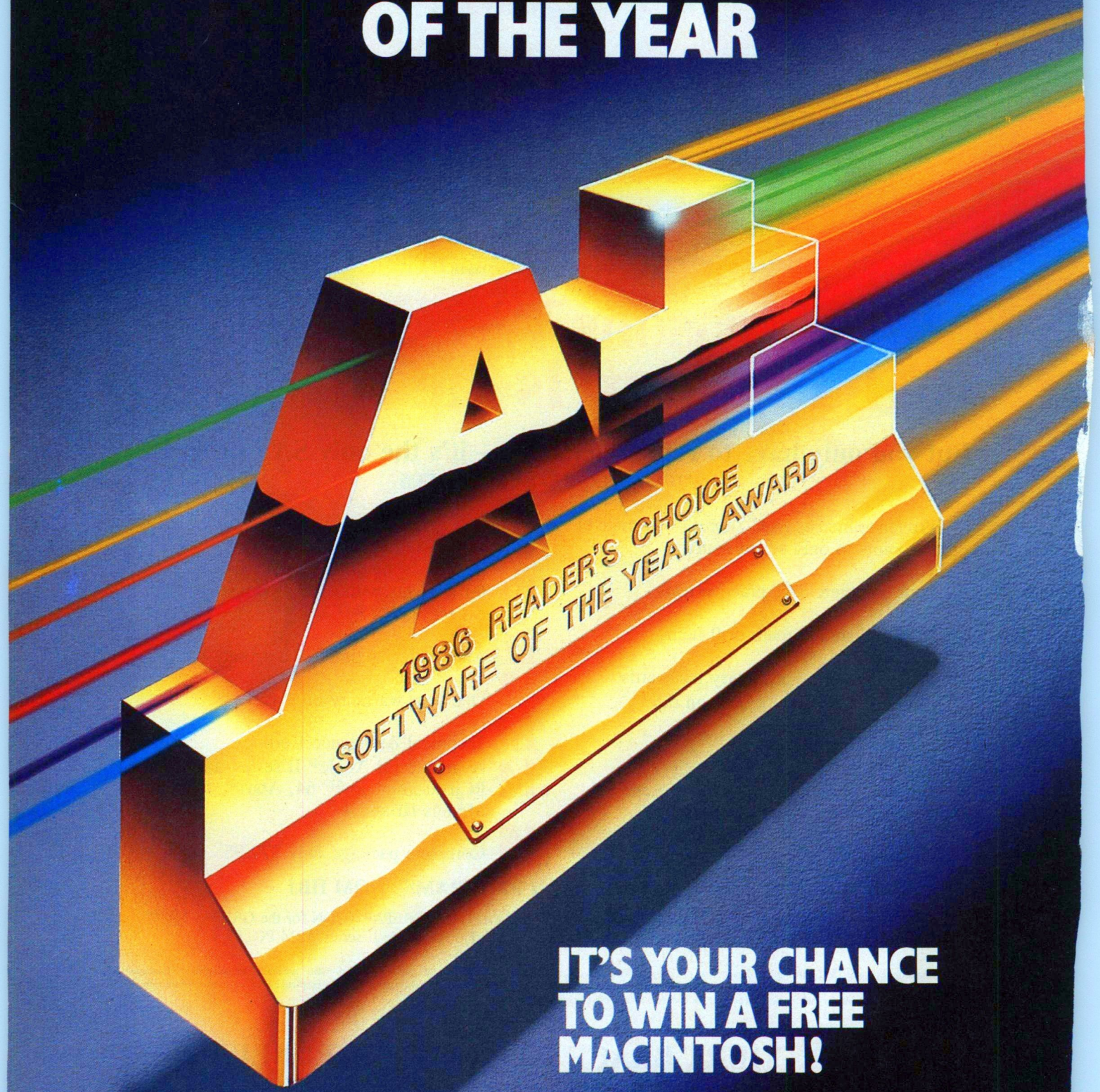

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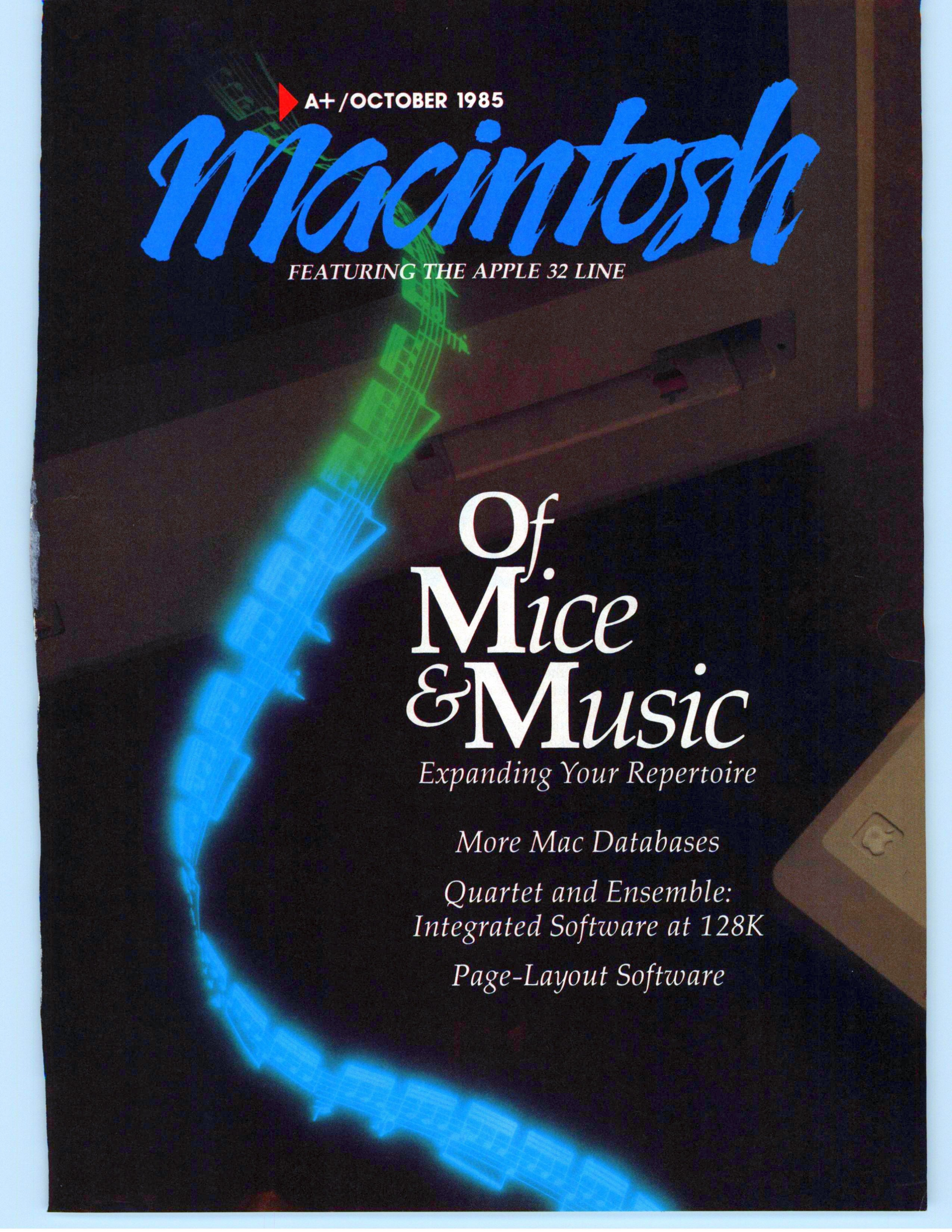

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Of Mice & Music

Two Macintosh programs that can expand your repertoire

BY SHARON ZARDETTO AKER

The Macintosh was never meant to be a music machine. It has a tinny little speaker and a sound chip that, even out of kindness, cannot be called a music chip. Why, then, are there so many music programs for the Mac? Well, first, it's amazing just what can be coaxed out of that sound chip, and programmers love to coax computers to do things. Second, and more important, the Mac's high-resolution screen begs for tiny notes to dance across it. The Macintosh has made music processing possible.

Let's take a look at two different approaches to Mac music making.

CONCERTWARE

Great Wave Software has, very simply, come up with the music package "for the rest of us." The ConcertWare Package is three programs: Writer, Instrument Maker, and Player. The programs are easy and fun to use, and the output—to screen, speaker, and printer—is terrific. Not perfect, but terrific nonetheless.

The Writer

The Writer portion of ConcertWare lets you compose and print your music. Note entry is by mouse or keyboard, and almost everything else—insertion of time and key signatures or tempo changes, for instance—is available as a menu selection. Two thirds of the Writer screen is the display area for your staff, with three views from which you can choose: the voice you are entering, alone on a large double staff; all voices (although only one is active for editing) on the large double staff; or smaller-scale staffs that show the current voice at the top of the screen and all the voices together on a double staff below it (see figure 1).

The rest of Writer's screen displays the note values and pitches that you can use. To enter a note on your staff, first you click on the time value you want, anything from a 16th note to a dotted whole note; then you click on one of the "note pitch buttons," notes that are stacked up on a double staff. The note then appears on your staff at the blinking cursor. You can put this cursor anywhere, and you can use the standard selection and Cut, Copy, and Paste techniques in the staff area.

Alternatively, you can enter notes from the keyboard, using a key arrangement that mimics a piano keyboard. This method is not as convenient as a name relationship—the B key for the note B, and so on—but Great Wave has designed the keyboard interface with an eye toward the near future and musical-keyboard availability. That promise effectively squelches any complaint about the current system. You can specify "real time" note entry when you use the keyboard, so if you're an agile typist with a good sense of rhythm, you won't have to enter any note values.

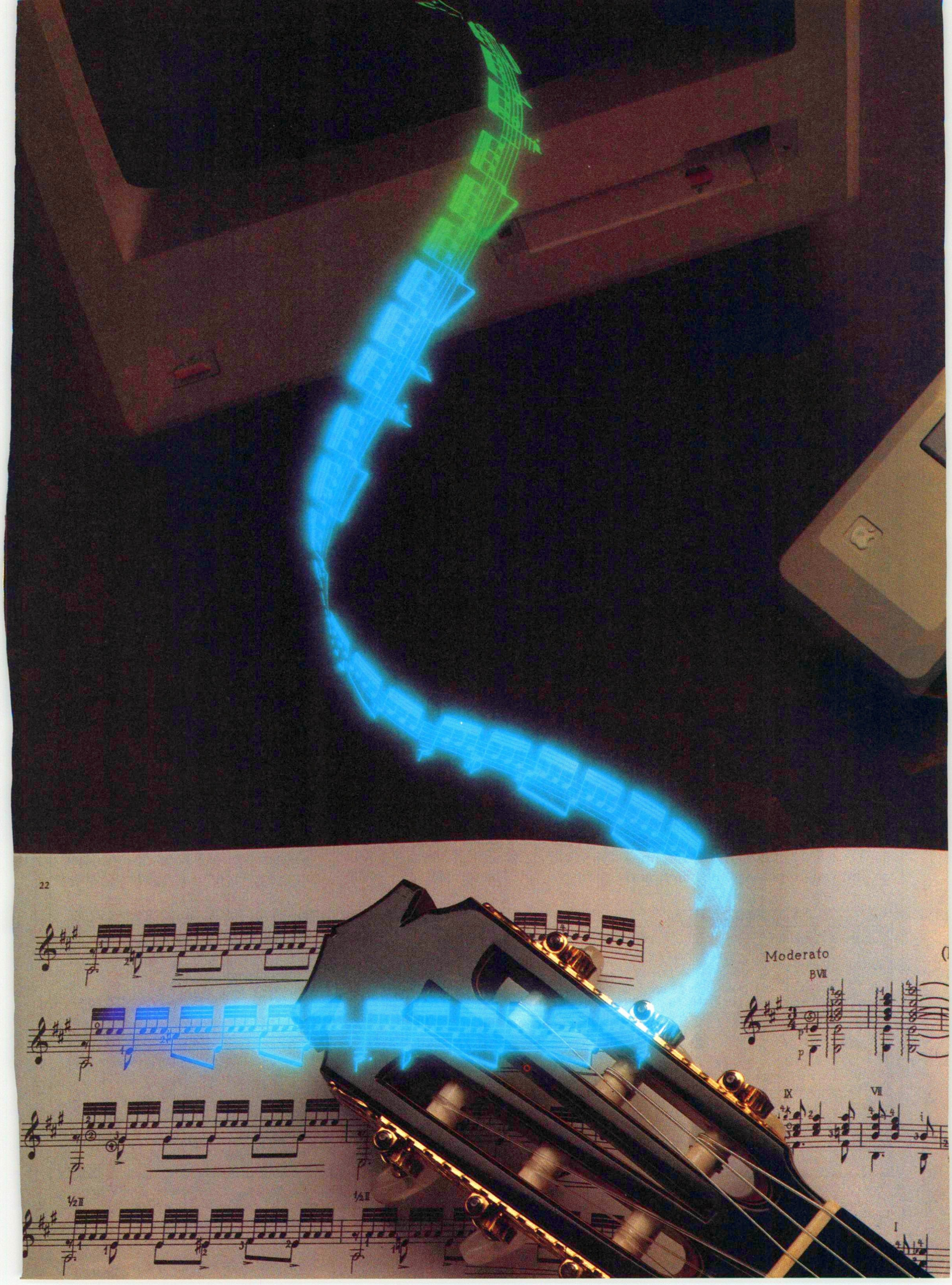
Writer automatically breaks up the staff into measures with the correct number of beats. If you try to add too long a note to a measure, the program will break it into notes of smaller value that are tied across the bar line. All the basics of musical notation are available, so you can have repeat bars, first and second endings, triplets, and accidentals (sharps, flats, and naturals).

An involved piece of music can be hard to read: Note-stem directions are keyed to the voice, rather than to the note's position on the staff, and 8th and 16th notes are flagged, not joined together. The Print to MacPaint option does put your score into a MacPaint document that you can edit and enhance, however. Writer also has a Change menu that lets you add or remove slurs or change notes up and down an octave or by a halftone. A special addition to the latest version of ConcertWare is Draft Play, which plays the piece without your having to switch to the Player program. During Draft Play, you can click the mouse if you hear a wrong note; the insertion point then appears at that spot in the music.

The Instrument Maker

The Instrument Maker application is fascinating. You can draw or graph the waveform you want, define the envelope, and control the vibrato. If you can't glean enough information from the documentation—and you probably won't be able to, unless you've had some previous experience in the area—you can have fun experimenting with sound creation. There's

DAVID BISHOP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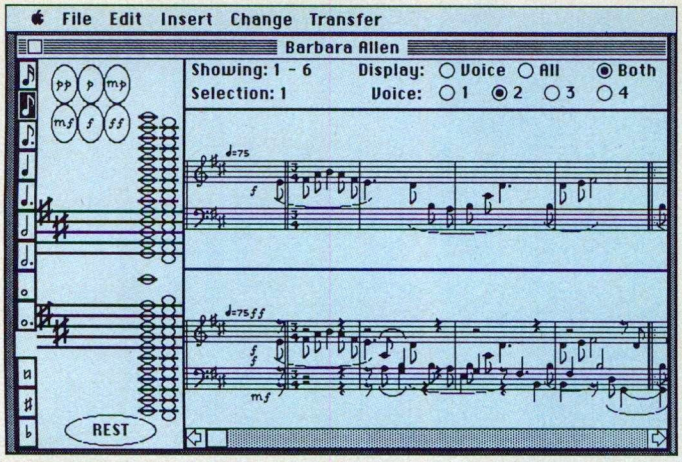

Figure 1: ConcertWare's Writer application offers three different views of your music. Here, the active voice—Voice 2—is displayed on the upper staff, while all the voices appear on the lower one.

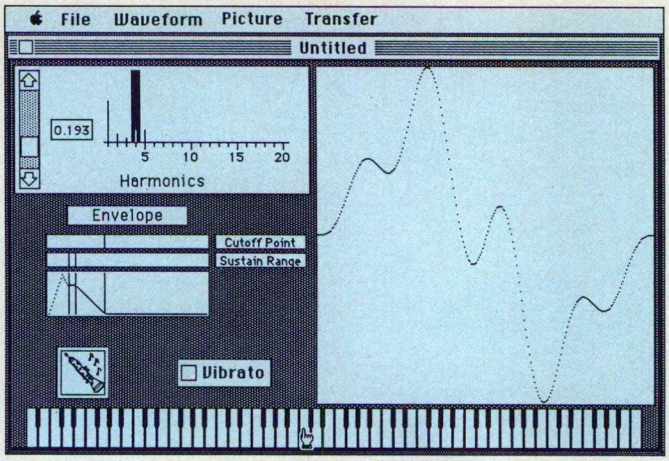

Figure 2: The Instrument Maker application lets you design your own sounds. You can graph your harmonics in the upper left, and they will be drawn in the large window, or you can draw directly in the window.

a little piano keyboard at the bottom of the Instrument Maker screen that you can use to hear the sound you're working on (see figures 2 and 5).

Every instrument gets its own icon, and you get to make it. Working in a FatBit-like matrix, you can draw from scratch or load in and edit another instrument icon. One of the Picture menu choices puts the current waveform into the picture box, for use as is or for further editing. The ConcertWare package comes with a full library of 35 predefined instruments, so you never have to use Instrument Maker if you don't want to.

The Player

The Player portion of the ConcertWare package is just that: You can play your compositions, displaying the title of the composition and any comments you wish at the top of the screen. The lower area is a scrolling staff that shows the music as it plays. The representation does not use standard musical notation, however; lines on the staff represent the pitch and duration of the note (see figure 3).

You can set the instrument for each voice from within Player and save the settings with the composition. The instruments' icons appear on the Player screen, surrounding a figure of a conductor. Another setting available is Pause and Continue, and Repeat Piece makes the music continually loop back to the beginning.

ConcertWare has a few minor problems that are easy enough to live with, given the general excellence of the package and its very low price. The problems are nothing more serious than the minor annoyance of the Open box covering the current voice settings when you want to change one of them.

ConcertWare's major disadvantage is its lack of integration: The three programs are separate applications. Although a Transfer menu lets you get from one application to another without going back to the desktop, you still have to wait for each program to load. The transfer is no problem if you have a 512K Mac and either a RAMdisk or Apple's Switcher utility, but 128K users will have to put up with it. An interesting note is that the latest release of the ConcertWare program, ConcertWare+, handles files not only from the original release, but also from Hayden's MusicWorks. Great Wave deserves praise not only for its software, but also for its attitude: ConcertWare is not copy-protected. It is, instead, reasonably priced, so you can afford your own, legitimate, copy.

PROFESSIONAL COMPOSER

Professional Composer is definitely not for "the rest of us," and it wasn't meant to be; it's for business, not pleasure. It is a score processor, rather than a music program. That is, it is designed for professional-looking printed output, not for sound. First, a look at what Professional Composer does, then a roundup of its features.

Basic Notation

Certain choices from Professional Composer's menus put palette bars at

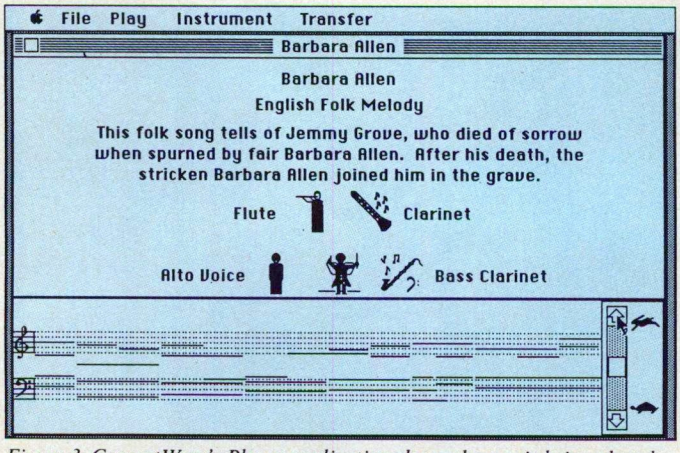

Figure 3: ConcertWare's Player application shows the music being played, the instrument chosen for each voice, and any comments you enter. You can change the playback speed at any time.

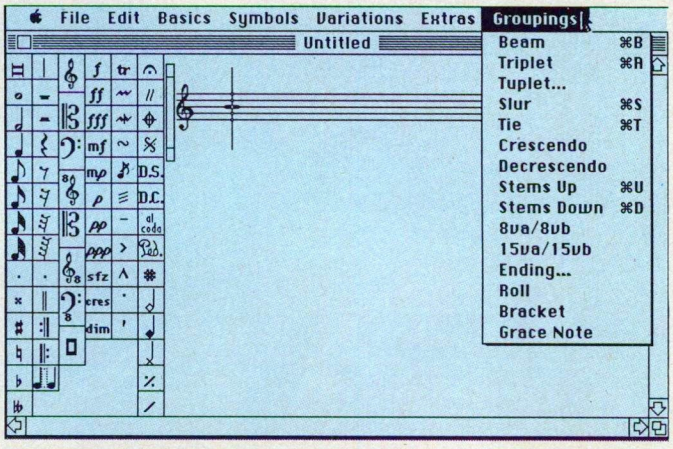

Figure 4: Professional Composer has six "palette bars" available, from which you can choose symbols for your score. To define the position of a note, you slide the horizontal bar on the cursor to the right spot.

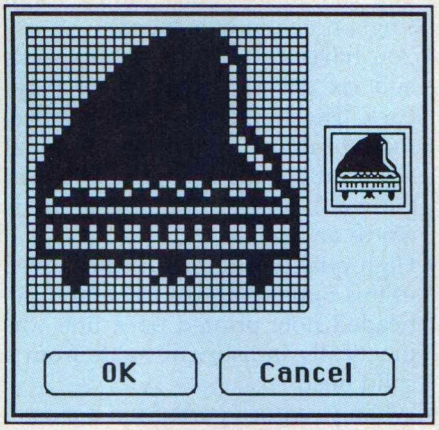

Figure 5: You can draw and alter instrument icons a dot at a time with Instrument Maker.

the left edge of the screen; from these you can choose any note or symbol you want to enter in your music. The selection is so complete that I'm not even embarrassed to admit that I found two symbols whose meaning I had to look up. Figure 4 shows the contents of the palettes—see if you know what all the symbols are!

You can choose any number or combination of staffs that you want: a single "voice" staff above a double staff for piano accompaniment; a single staff alone; or an unlimited number of staffs, each representing a single instrument in a full score. The staffs can be connected by braces or brackets at the beginning of the manuscript and/or by bar lines throughout the piece. To enter the notes themselves, you choose the note value from a palette and slide a horizontal bar on the blinking insertion point to the spot on the staff where you want the note to appear. The alternative keyboard note-entry system involves a cardboard stand-up keyboard with the correct keys noted, which is a great help (see figure 6).

Beyond the Basics

To give you an idea of Professional Composer's more advanced features, I'm going to present a scenario of what my husband, a school band director, might do with it if I lent him my Mac. He starts up Professional Composer because the band has to play at Gym Night and needs some appropriate between-acts music. After entering a melody line, he goes back and begins to flesh out the score: the brass section, the wind instruments, and even the percussion parts. He writes all the parts in the same key, regardless of the instrument.

Once the basic instrumentation is done, he adds the finer details: slurs here and there, beams instead of flags

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for contiguous 8th and 16th notes, and crescendo and decrescendo markings. He labels every staff for the correct instrument and then transposes each into the correct key with a few clicks. Then, because a fourteen-year-old tuba player doesn't have a large range, he sets the instrument range in a special dialog box and has Professional Composer check that all the notes for that part are within the defined range. Finally, a few extras, such as having every fifth (or tenth) measure numbered and inserting rehearsal marks (letters above certain measures for quick reference). Now, for the printout: a title page with song title, composer, arranger, and comments; next, the conductor's score with all the parts; and, finally, a separate, instrument-specific, copy for each of the band members.

The program has more options than I can list in this article, including the ability to enter lyrics. Suffice it to say that Professional Composer can print almost anything you've ever seen printed in a music score.

The Update

Between the time I wrote this review and the time it was slated for publication, Mark of the Unicorn came out with the 2.0 version of Professional Composer. In case you've seen the original or read reviews of it, here's a brief list of corrections of problems in the original:

- You can put in more than one line of text for lyrics, and the words remain lined up under the notes when you print the score.
- You can easily choose and erase a single note out of a chord.
- You have a choice of three speeds and six different sounds for playback. The variety of sounds is nice, though unnecessary. The original had only one playback speed ("dirge"), and this change alone is worth an update.
- High-quality printing is improved in this update; previously a hollow-headed note printed on a line was practically indistinguishable from a solid head.
- When you print parts from a master score, a series of rest measures is now automatically combined into a single measure, with the number of rest measures noted.

In addition to fixing a few flaws, the update has some entirely new features:

- The program works with the LaserWriter, and the output is superb.
- You have more control over print format: starting new pages or lines, indenting lines, adding headers or footers, or choosing different fonts. A new Print option turns a page of music into a MacPaint document.
- A new palette bar (not shown in the accompanying illustration) has additional symbols for things like jazz notation.
- An additional alternative for note entry uses the keyboard and lets you control the insertion point as well as enter music.
- A Hide All option is available in the Symbols menu to get all the palette bars off the screen, which is handy,

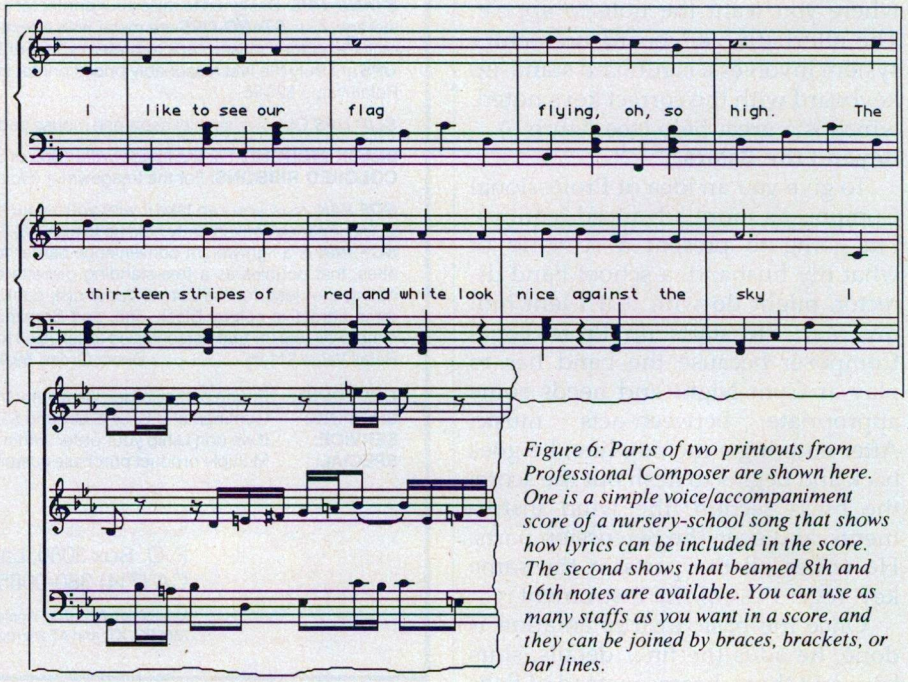

Figure 6: Parts of two printouts from Professional Composer are shown here. One is a simple voice/accompaniment score of a nursery-school song that shows how lyrics can be included in the score. The second shows that beamed 8th and 16th notes are available. You can use as many staffs as you want in a score, and they can be joined by braces, brackets, or bar lines.

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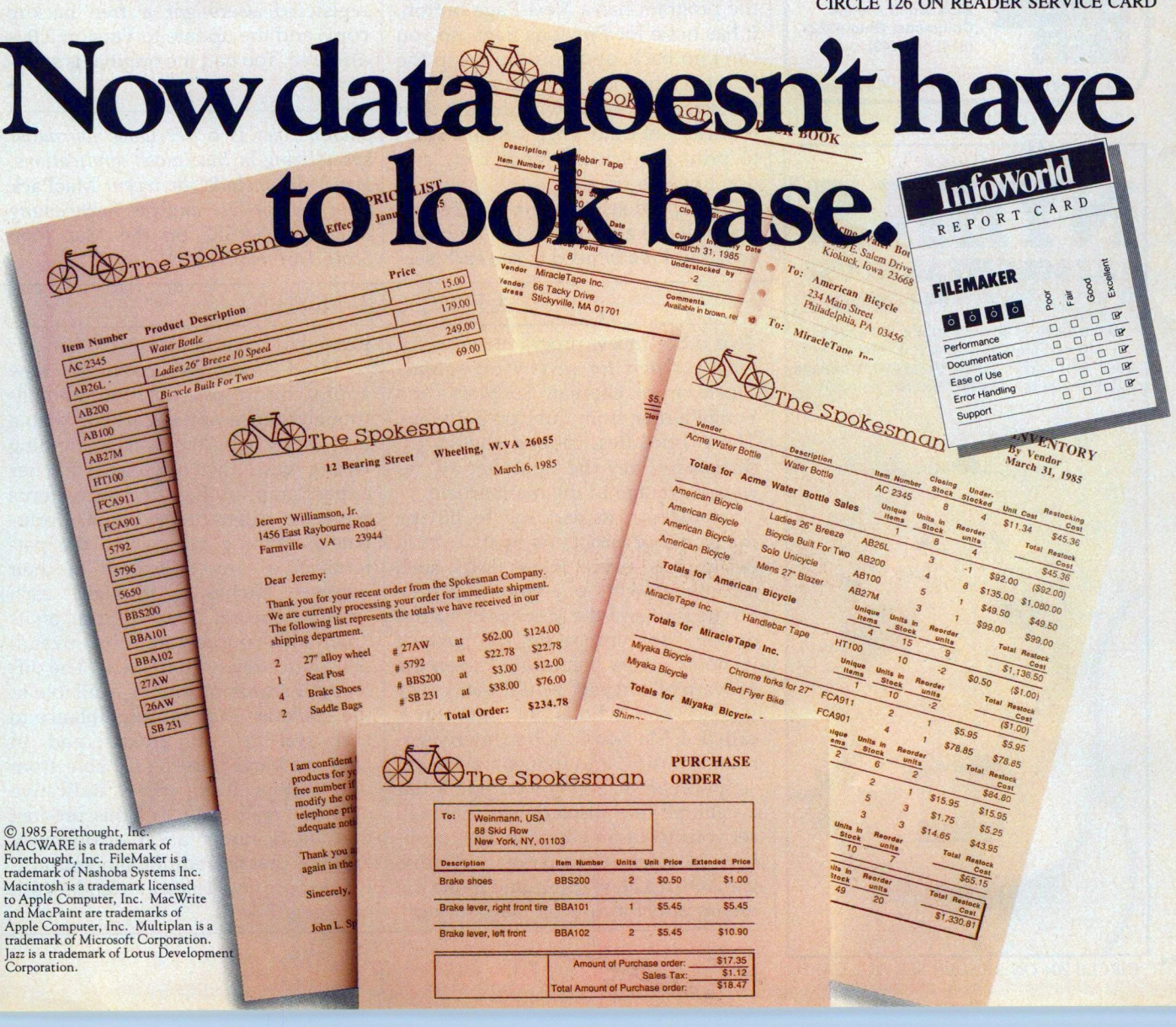

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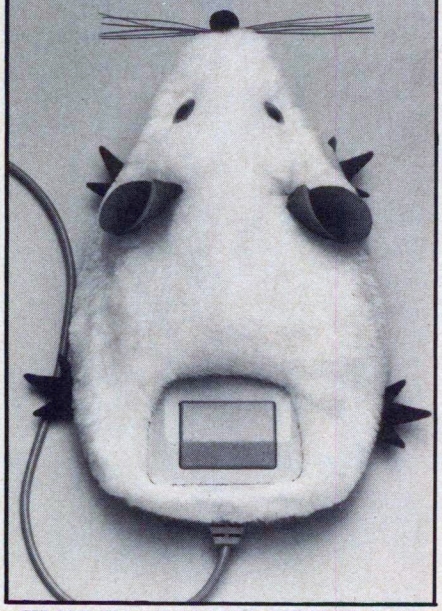

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since otherwise you have to toggle each one off separately.

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Well, I'd like some easy chord-symbol entry—ideally a system that would also change the chords when you transposed the music. At the least, I could get by with a specialized font with accidental symbols and perhaps guitar-chord fingerings.

Professional Composer is also missing something pretty obvious in its printing setup. Before printing, you can preview your pages in a Show Page fashion, where you are allowed to add or subtract a measure or two from the page if it is not breaking exactly where you want it. Although the program has a Next Page button, it has none for Previous Page, so you can't go back, and you can't skip the first-page preview. It takes a while for the screen to be drawn, and the wait is a waste of time when you just want to print a quick reference copy and don't need a preview.

The speed selection for playback is a wonderful addition in the new version, but I really need to see each section as it plays. Tracking down the exact measure in which you hear a mistake is difficult when only the first few measures appear on the screen.

Professional Composer is the first and, to date, the only program of its kind. If you need (want) something with its capabilities, you can't exactly shop around for the right software, but you can shop around for a good price, and you should. At $495, Professional Composer is among the most expensive packages in the Mac's ever-increasing software base.

Is it worth it? Your need and your wallet will have to help you decide. The program is excellent, and its manufacturer has the right attitude: registered users get a free backup copy, and the update to Version 2.0 is also free. Too bad the original is so expensive! ✚

Sharon Aker is a free-lance journalist specializing in Macintosh applications. Her books include the recent MacPack *from Ashton-Tate and the forthcoming* Microsoft BASIC on the Mac *from Scott, Foresman.*

A FEW SOUR NOTES

Two other music programs were originally slated for review here: MacMusic, from Utopian Software, and Song Painter, from Rubicon Software. These brief descriptions should explain why they did not, after all, receive coverage in the main article.

MacMusic, in addition to having many minor problems in its overall design, has several major flaws, such as only showing one voice at a time on the staff and the absence of a Print option. Most important, the pitch of its notes is very inaccurate—even the proverbial "tin ear" would notice. My younger son, who is not quite three, called a MacMusic tune "merry-go-round music," and that is a good description of MacMusic's output. It has a calliope-like discordance that will set your teeth on edge. Smaller problems include awkward notation entry, the lack of a New command in the file menu, and the use of "subroutines" instead of musical repeats.

SongPainter takes an entirely new approach to music notation, and, although there's nothing wrong with a new approach, there is something wrong with this approach. Pitches appear graphically; different patterns represent different pitches. Unfortunately, nothing intrinsic to the patterns gives any indication of their relative pitches. Although each "sharp" pattern is an inverse of its "natural" counterpart, the overall scale has no pattern relation. The different instrument sounds available in the "palette" bear no resemblance to their real-life counterparts, and, in fact, are barely distinguishable from one another. It is perhaps indicative of the overall quality of this product that its documentation erroneously explains that in traditional notation, a whole note gets 16 counts, and a 16th note gets 1.

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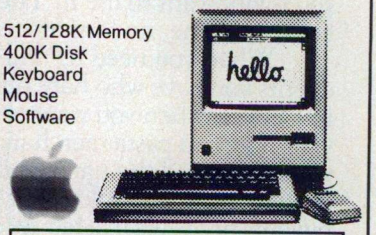

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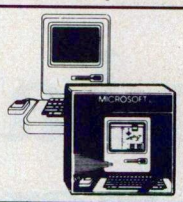

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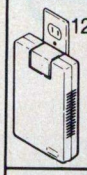

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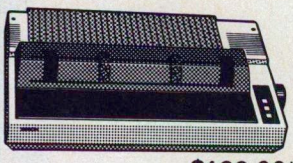

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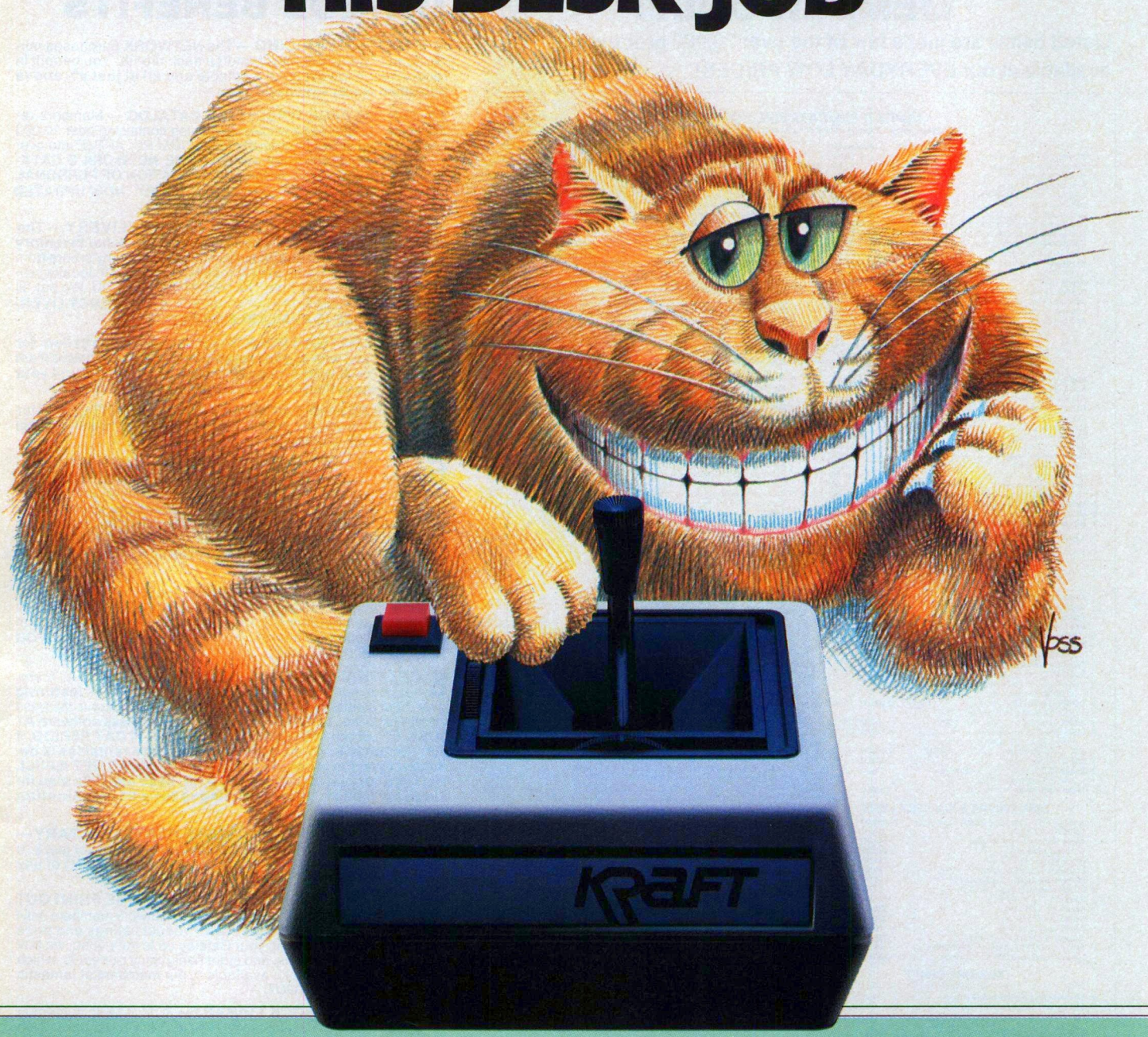

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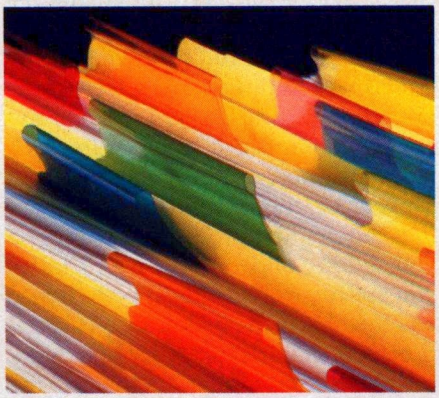


THE ELECTRONIC FILE FOLDER

part two

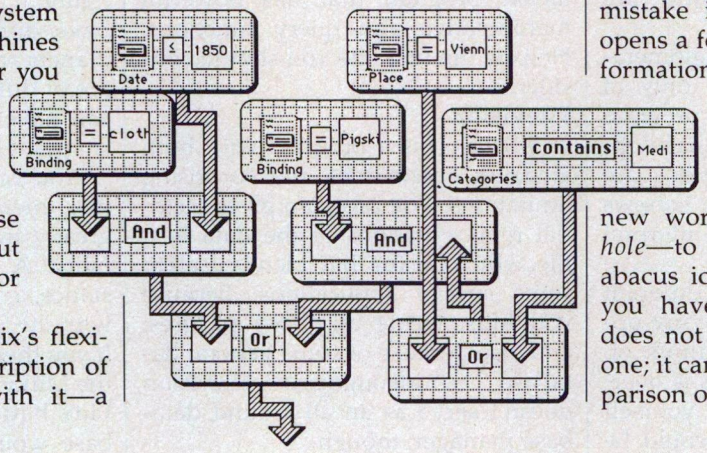
So many database managers are available for the Macintosh that, if *A+* did one in-depth review each month, describing them all would take nearly 1½ years. So, assuming you'd rather not wait that long, we're offering short reviews of five Mac database managers as a follow-up to "The Electronic File Folder" in the June 1985 issue (pages 107–119).

Helix

Helix is special—so special that its publisher doesn't call it a database manager but refers to it as an "information management system." Without doubt this relational system (for use with 512K machines only) is powerful, and, after you get used to its terms and operation, it is simple enough to use. You may feel as though you're suffering from an icon overdose when you use Helix, but that's a small price to pay for such an advanced program.

I might best explain Helix's flexibility by giving a brief description of the tutorial that comes with it—a watch-the-screen demo accompanied by a cassette tape. The demo collection is a group of three related data files—each data file is called a relation. One relation holds information about each book in a library, one is a file of cardholders, and the third is an In-Out file that keeps track of the whereabouts of each book. A sample screen from the demo is shown in figure 2, on the following page.

Figure 1: This Helix calculation represents the Search criteria "Books printed in 1850 or earlier and bound in cloth or books bound in pigskin that are about medicine and/or were published in Vienna." The white squares in the tiles, called black holes, are dark before they are filled.



The ghost that is running your Mac during the demo creates a form for use when someone checks out a book. The ghost types the card holder's ID number, and the program automatically enters the person's name and status (such as number of overdue books) from the card-holder relation. The ghost fills in the ID number of the book, and Helix pulls the author and title from the book relation. The ghost librarian notices a mistake in the author's name and opens a form containing the book information, it corrects the spelling in that form, and the check-out form reflects the altered spelling.

Helix contributes some new words—*abacus, tile,* and *black hole*—to the Macintosh world. An abacus icon represents a calculation you have defined. The calculation does not have to be a mathematical one; it can be an if-then test or a comparison of names or dates. When you

use the icon on a form, you see only the result of that calculation.

To define a calculation, you use tiles, patterned rounded rectangles containing two or three black holes. The black holes have operators (greater than, equals, AND, and so on) between them. You place information in each black hole, and Helix performs the operation. The information can be an icon that represents a field in your records (such as Days Overdue), or you can type it in directly (such as 10). Placing these two items of information in the Multiply tile results in the total overdue fine appearing in your form wherever you place the abacus icon.

The power—and the problem—of the Abacus function is that you can nest calculations: You can place one tile into the black hole of another tile by means of a linking arrow. In no time at all, you can have a network of almost unreadable tiles and icons.

When you print this conglomeration out, your choices are only of scaled or full-size tiles; the program really needs an English-language option. Although the calculations are easy enough to design, figure 1 shows how difficult they can be to interpret (see page 143).

You can choose from 52 different tiles—the program includes any operation you could possibly think of. Helix's commitment to icons is overdone here; designing a tile yourself by typing in the operator would be easier than scrolling through the list to find the one you want.

Helix is beautiful, however; all my criticisms are linked to its icon overpopulation. It has a field icon for every field in a record, another for each template you create to view different aspects of the information in your files, more for any selection criteria you define, and one for every index you specify (for sorting speed). It also has the abacus icons for each calculation you define. In Helix, you work on a desktop similar to that of the Finder, and it soon becomes impossibly cluttered. You really need folders, such as those on the desktop. Another Helix desktop problem is that pressing any key while an icon is active automatically renames that icon.

Helix's problems are minor compared to its power and possibilities. Be ready to invest a good amount of time in learning your way around Helix. Despite its excellent documentation and helpful demo tape, it has so many features that you'll spend several evenings getting acquainted with them all. If you need a relational-database program that has powerful manipulative and query functions, Helix is the first one you should consider.

Filevision

Filevision is a program with both amazing possibilities and surprising limitations. The program gives pictorial representations of the data in a file, which means that it lends itself to some special applications. Because you must create all those pictures, and also because of some general database shortcomings, Filevision doesn't serve as an all-around database manager, though.

A Filevision database appears on the screen as a picture. The items in the picture are divided into different types, and every object within a type has a sheet of information keyed to it. The data fields associated with any object depend on its type. This system is a subtle departure from the traditional database structure, in which every record in a file has the same assignment of data fields. The Filevision type system has advantages as well as drawbacks—which I will get to shortly.

Figures 3 and 4 give you an idea of the unusual things you can do with Filevision. The database in this example is of the Solar System. Three types of objects make up the picture: orbits, planets, and moons. If you select any object and click on the Info button (or double-click on the object), a screen of information appears. The information stored for planets is different from that stored for moons, and the orbit information is different from the other types. (This is the advantage of Filevision's type differentiation.) As you can see from figure 3, (the same type of object can have different appearances) all the planets are of the same type, but they are of different size and shape. A file can have no more than 20 different shapes.

You can link Filevision databases into hierarchical structures and so greatly increase the program's flexibility. A separate database, for instance, could be of the Milky Way, with the Solar System file linked to it. If you then selected the correct spot in the Milky Way picture and clicked the Link button, the Solar System database would appear. You could also create other databases for each of the planets with highly detailed pictures of their satellites' orbits and link those files to the Solar System file.

It's surprising—and disappoint-

Figure 2: This is a typical screen from the Helix demo tutorial. The Library window shows the relations available—you use the relation icon to create new relations and the wastebasket for getting rid of ones you don't want. The In-Out window is an opened Library relation. The icons in the white area are just a few of the many that crowd relation windows. The List window shows one of many forms that the Library collection uses.

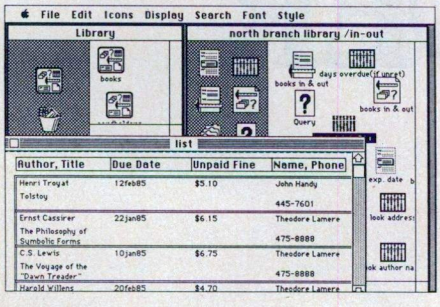


Figure 3: To get information about one of the items on the main Filevision screen, you can double-click directly on it.

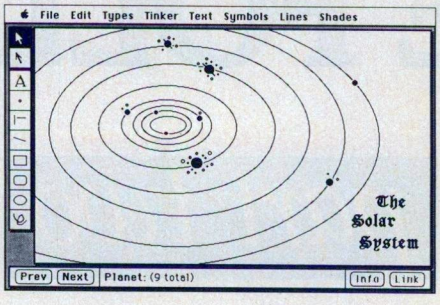
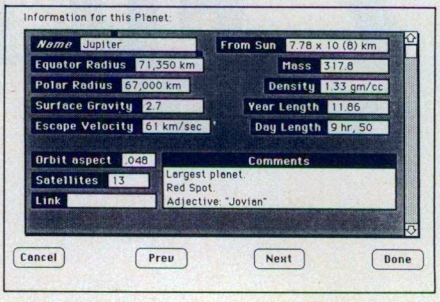


Figure 4: When you click on the picture of Jupiter on the main screen, this information comes up. Field names are limited to 15 characters.



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ing—that you cannot import MacPaint figures into Filevision. You must design all items, dot by dot, in the Symbol Editor.

In addition to designing symbols for your file, you can use other drawing options—lines, circles, and so on—right on the main screen. Because the graphics are object-oriented, if you place a circle on the screen, it remains separate from all other items on the screen, and you can move it at any time. (In MacPaint, once you place a circle, it blends into the rest of the picture and is no longer an object that you can manipulate independently.)

The results of a Filevision Search operation are interesting. If you tell it to find all the planets whose surface gravities are greater than Earth's, the program dims all items on the screen except for those planets. Filevision's type differentiation is a drawback here: You can search through only one type at a time, so you can't ask for all bodies (planets and moons) that have a certain density. Neither can you do OR searches—planets whose mass is less than that of Earth's or whose density is greater than 1.2 grams per cubic centimeter, for example. Other limitations are the absence of calculated fields and that field names cannot be longer than 15 characters.

Filevision lets you print lists of the information in your file for an object, a selected group of objects, or for all objects of a specific type. Although you can add a header and/or footer to the page and arrange the information in any way you want it to appear, this is not a true Report function. All you get is a list of the information about each object; you cannot get totals, counts, or averages for any group. The program prints everything in Geneva–12, although you do have a choice of fonts, styles, and sizes when you design the screen. The only way you can see a report is by printing it.

The original release of OverVUE ranked among the best of the available Mac databases. OverVUE 2.0 includes many entirely new features.

Filevision is special, if you have a special use for it. As I stated before, it cannot serve as a general-purpose database program, but it can do things no regular database manager will ever do.

FileMaker

FileMaker is the latest entry into the great Mac database race. My review copy was a prerelease version, so it had only minimal documentation—but that didn't matter. Setting up records and manipulating them in FileMaker comes naturally to anyone who has a little Mac experience.

FileMaker has a lot going for it, but one of its strongest points is the flexibility it gives you in the layout stage (see figure 5). You can place your fields anywhere on a form of up to 14 × 36 inches; use all the fonts, sizes, and styles; paste in pictures from the Clipboard; and add boxes or lines to divide or surround fields. While you are in the Layout mode, you can turn on a grid to help you place fields accurately and use a T square for accurate measurements in order to align the fields to match ready-made forms. You can use any number of layouts with a single data file; you do not have to use every field in each one.

FileMaker is also flexible after you've set up your database. You can change just about anything except the type (text, number, date, or calculation) of a field. You can adjust the formats of the font, size, style, and alignment; you can make the area of the screen or paper that the field covers smaller or larger; and you can add entirely new fields at any time.

Design options are just about unlimited and so is the amount of information you can store: The overall size of a file, or the number of records it contains, is limited only by disk space. Text fields can hold up to 32,000 characters, and other fields can hold up to 250 characters.

You can search and sort to your heart's content in FileMaker, being as definite or as vague as you want to be. The program finds the records that meet any criteria (equals, greater or less than, and so on) in any number of fields. You can also tell FileMaker to look for a new account in a Comments field, for example, and it will find "This is a new account" and "Look into new account at second branch."

FileMaker rates high in communication skills: You can save your files in a format that MacWrite, Microsoft Word, BASIC, or Multiplan can read. The communication works both ways too: FileMaker can read tables generated in those programs.

The documentation of FileMaker doesn't really differentiate between records and reports; it treats reports, in which you can do cross-record calculations, as just another layout option. Full report functions, with

Figure 5: FileMaker gives you complete freedom of form design. You use the book icon in the upper left to view different records in the file.

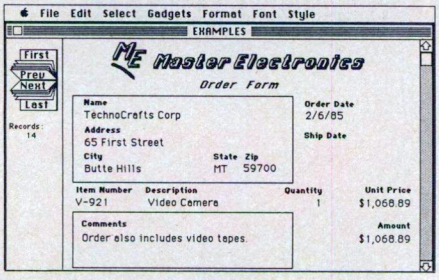


Figure 6: Keystroke's form for a mailing label; the characters placed after some of the field names indicate the position of that field on the label.

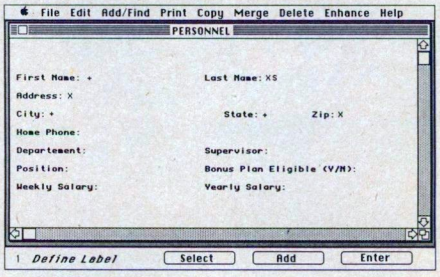
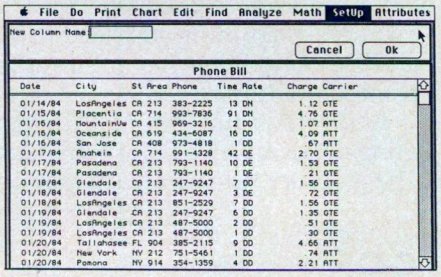


Figure 7: OverVUE's columnar setup makes it a cross between a database program and a spreadsheet program.



Subtotal, Total, Average, and Count options, are available, however.

FileMaker has more features than I can describe in a brief review. It works smoothly and intuitively. It is *the* database program for anyone who has to use or generate a lot of forms—invoices, mailing labels, personnel reports, or whatever. It may be the latest entry in the database race, but it's certainly not in last place.

Brock Keystroke

Brock Keystroke is a relational-database manager that has many special features. It would be an excellent program on any other computer; as a Macintosh application, however, it is a great disappointment.

Keystroke is easy to learn, but, although it is not difficult to use, you won't know you're using a Macintosh. Once you have set up your fields (they can cover nine screens), you can go back and enhance them: select key fields for sorting, turn numeric fields into calculated fields, and define protected fields. To indicate which fields should have such enhancements, you choose the proper mode from the menu, then tab or click to the desired field, and type an X in it. A true Mac program would let you just click in the field.

Just setting up the fields can be a trial. Basically, all you have to do is enter the name of the field, define its type (by menu or key command), and enter the number of characters the field should contain. This procedure seems simple enough, but unless your placement of the fields on the screen allows enough space for the field length you've defined, Keystroke will not accept the form. Counting spaces on the screen is not my idea of a Macintosh environment. To make matters worse, Keystroke stops the entering process as soon as it encounters one such space problem; if you have others, you won't know it until you've corrected the first problem and tried to enter the form again.

Although you can define many types of fields—Text, Numeric, Money, Phone, Date, and Yes/No, for instance—even here there are problems. In formatting a Money field, for instance, you must state how many digits are needed. If you specify four places, all your records will have a dollar sign, a comma, and a decimal point—and the comma remains even if you enter a figure less than $1000.

Each time you select a new mode from a menu, a dialog box announcing your selection appears on the screen; after a few seconds, the status line on the screen reflects your choice, and you can continue your work. This unwarranted delay is sometimes further lengthened because the window closes and reopens when you switch between certain modes.

Many of Keystroke's features are awkwardly implemented. Just adding a field to an existing record involves much more than typing it on the screen—the program creates a whole new file when you add a field. To create a form for printing, you must type cryptic characters in the fields you want to print (see figure 6); the characters indicate whether the text field is printed on the same or the next line. The order of the fields in a printed form is always the same as that in the original form, although you can skip some fields. And after all that work, you can't get anything besides draft-quality printing.

Keystroke has some powerful features that make its basic problems all the more disappointing. It has a Search and Replace option that lets you alter any item in every record; a Cross-Reference feature that lets you transfer information between files; a MacWrite Letter Merge feature; and SYLK and DIF formats that let you exchange information with other programs and other computers. It even has a password system that offers three levels of security: complete use of the file for viewing and changing data, view-only with no changes possible, and a limited-view option that does not show the protected fields in the file.

If Keystroke's security system appeals to you, your best bet might be to wait until its developer releases an updated version that corrects its current flaws.

OverVUE

The original release of OverVUE was special enough to rank it among the best of the available Mac database programs. OverVUE 2.0 not only addresses a few of the original's shortcomings, but it also includes many entirely new features that increase its versatility even further.

The columnar format of OverVUE

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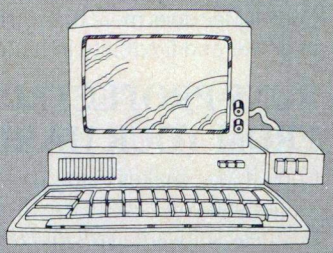

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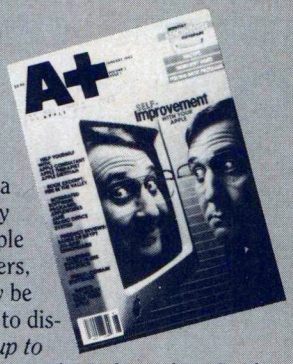

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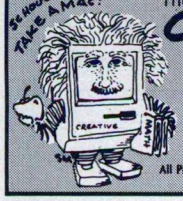

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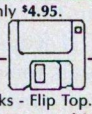

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makes it a database program in spreadsheet-program's clothing (see figure 7). In the original version, the horizontal scrolling necessary to view all the fields in one record was a drawback of this setup, but the new version has a Zoom option that lets you view any record in a screen format you can design yourself.

The most significant change in this update is that it has relational capabilities. Imagine a file that stores information about your phone bill: the numbers, dates, and costs of all calls. Then assume you have a file of information related to a research project that includes your contact's phone numbers. OverVUE can combine the files so you can easily determine the phone expenses related to your project.

OverVUE has good report-generating features. Most notable among them is the Group function. If you have worked with Multiplan and needed to arrange subtotals for sorted items in a column, you know how tedious it is to insert an empty row and define a subtotal for each group of items. When you use OverVUE, however, you can apply its Group function to a column (which represents a field) in the data sheet. It separates the presorted items into groups, labels them, provides the subtotals for each group, and gives the grand total for the column. In addition to the normal Average, Count, Minimum, and Maximum functions, OverVUE also has Running Total and Running Difference options.

Another major addition to OverVUE in this second release is its charting capabilities. You can use one or more of your columns to create bar, line, column, pie, and area charts—with stacked charts also available. You define one column as the Legend and others as the values you want to chart. You can print charts only as screen dumps.

Data entry in this new release is more convenient than in the earlier one. Moving around from cell to cell is easier, you can enter data during the Zoom stage if you want, and—OverVUE has clairvoyance. If you begin to type in an item and its first three characters match a previous entry in that column, OverVUE will fill

in the rest. You can keep typing if you want to override the feature; OverVUE will keep "suggesting" the correct item for the field as you enter more characters.

OverVUE falls short, as do so many Mac database programs, in its printing options; you do not have a choice of fonts and styles. Because OverVUE 2.0 communicates so well with so many programs, however, it doesn't take much to save a report on the disk, open it in MacWrite, and format it there. For working copies printed from OverVUE itself, your reports can have headers and footers. If you want mailing labels, you can make them any size and print in multiple columns.

OverVUE, being RAM-based, is incredibly fast. The trade-off for that speed is that the amount of information it can handle in a file is limited. The number of records in a file changes according to the size of each record; for a standard mailing list, OverVUE can handle about 8000 records on a 512K Macintosh. (A mailing list, however, has the least amount of data you'll ever store in a record. A more reasonable approximation of OverVUE's capacity is probably about 2000 or 3000 records.)

This update also addresses another, related problem: You have to get all your information into RAM before you can work with it. An extremely large file that took an embarrassing 35 minutes to load with the original OverVUE now loads in 20 seconds.

OverVUE 2.0 can read files generated by many different programs—including other databases. So, if you want OverVUE's speed and great report-handling capabilities but you need another database and a hard-disk drive to handle your vast files, you can use OverVUE to manipulate subfiles generated by your main program. You can even use OverVUE files with Microsoft Word's Merge function.

Last but not least of the new features is OverVUE's Macro function. A macro is a series of commands that the program executes at the touch of a key. You can define a macro by typing it in the Note Pad, or even in Mac-

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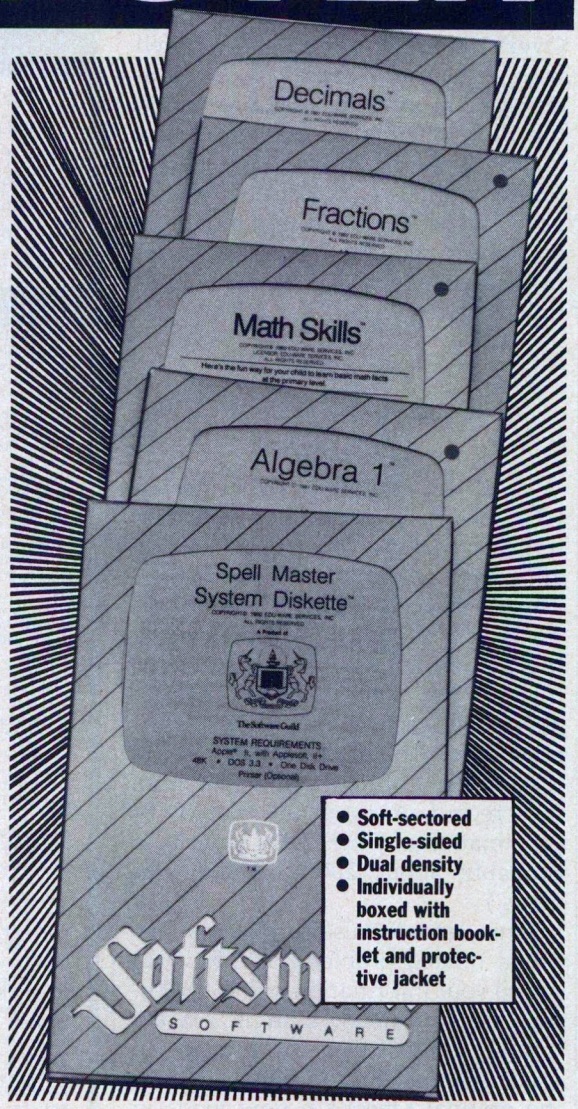

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LUNAR PINBALL. Item H-691-63542-47. Ding, ring, bing, the ball's in play! All the excitement of planetary pinball in zero gravity playing field. All the sounds of real pinball. Lights blink as score adds up. Add: ten flippers and force field shields! Nothing on earth quite like this! Requires: Apple® II with Applesoft, II+, IIe; 48K RAM; DOS 3.3; 1 disk drive, game paddle.

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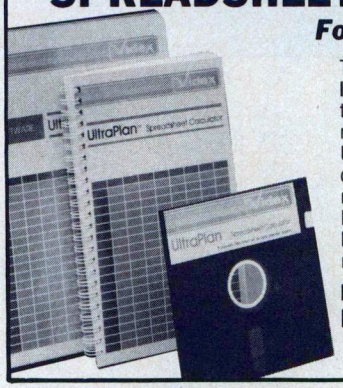

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Sharon Aker is a free-lance journalist specializing in Macintosh applications. Her books include the recent MacPack *from Ashton-Tate and the forthcoming* Microsoft BASIC on the Mac *from Scott, Foresman.*

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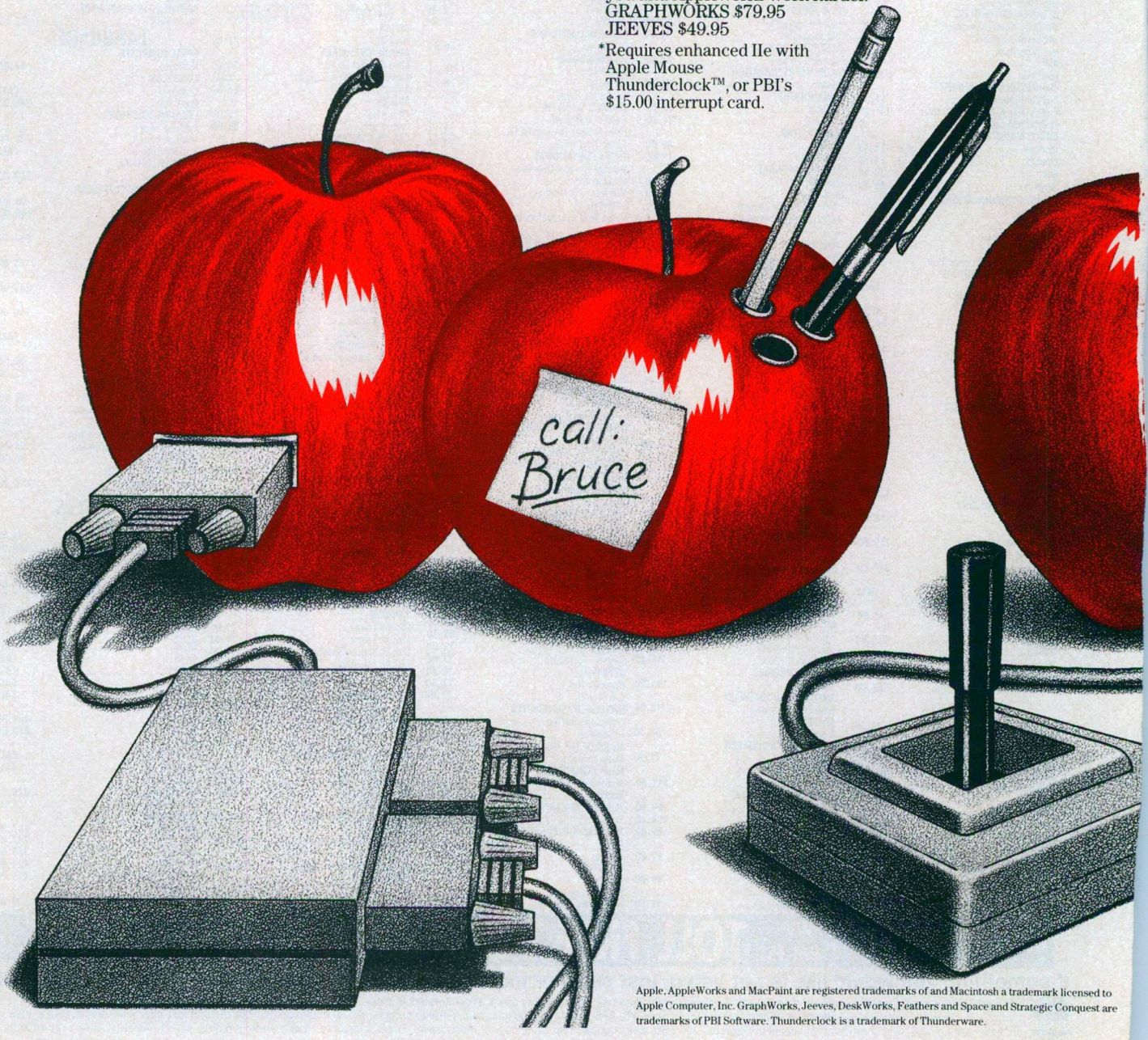

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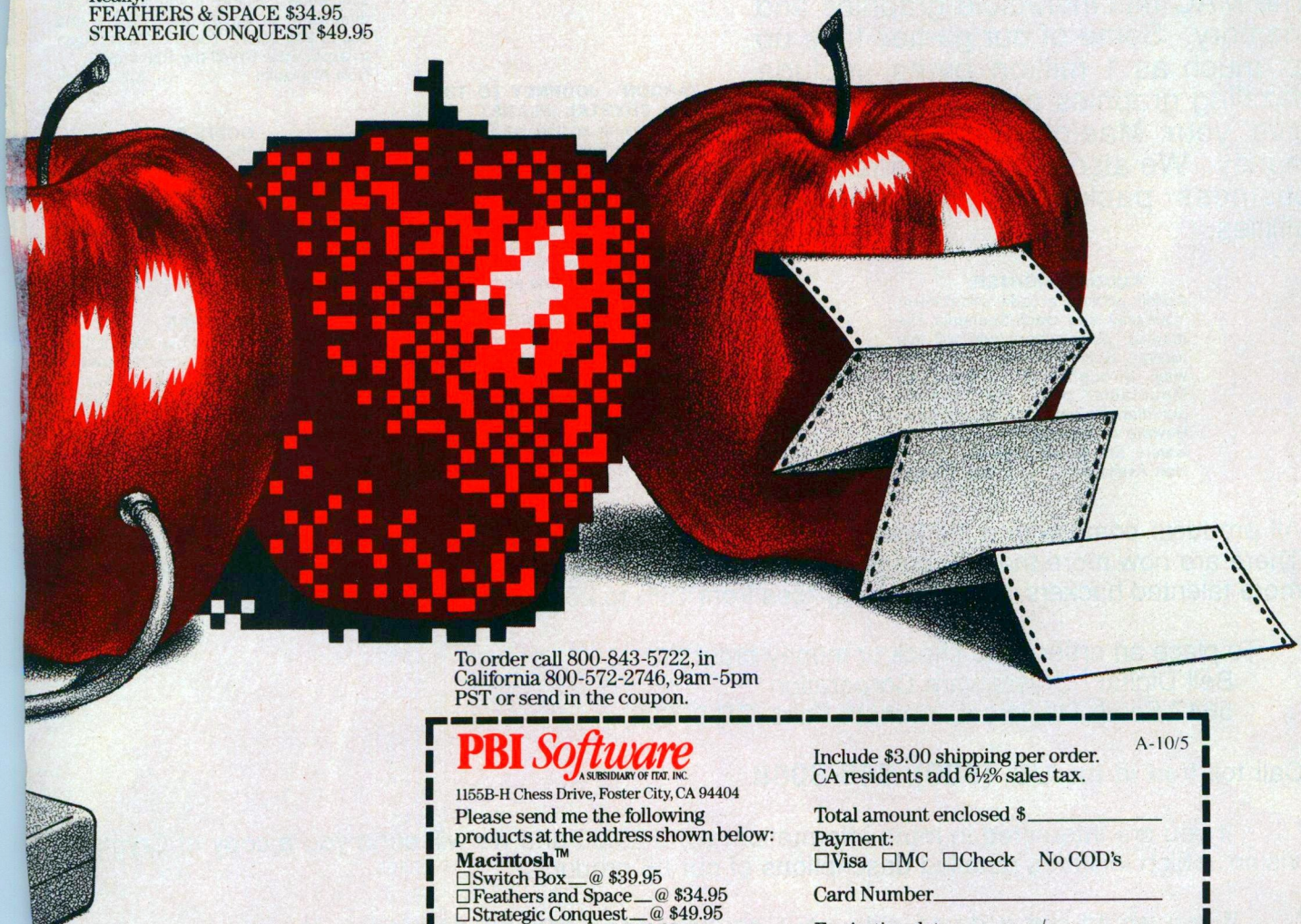

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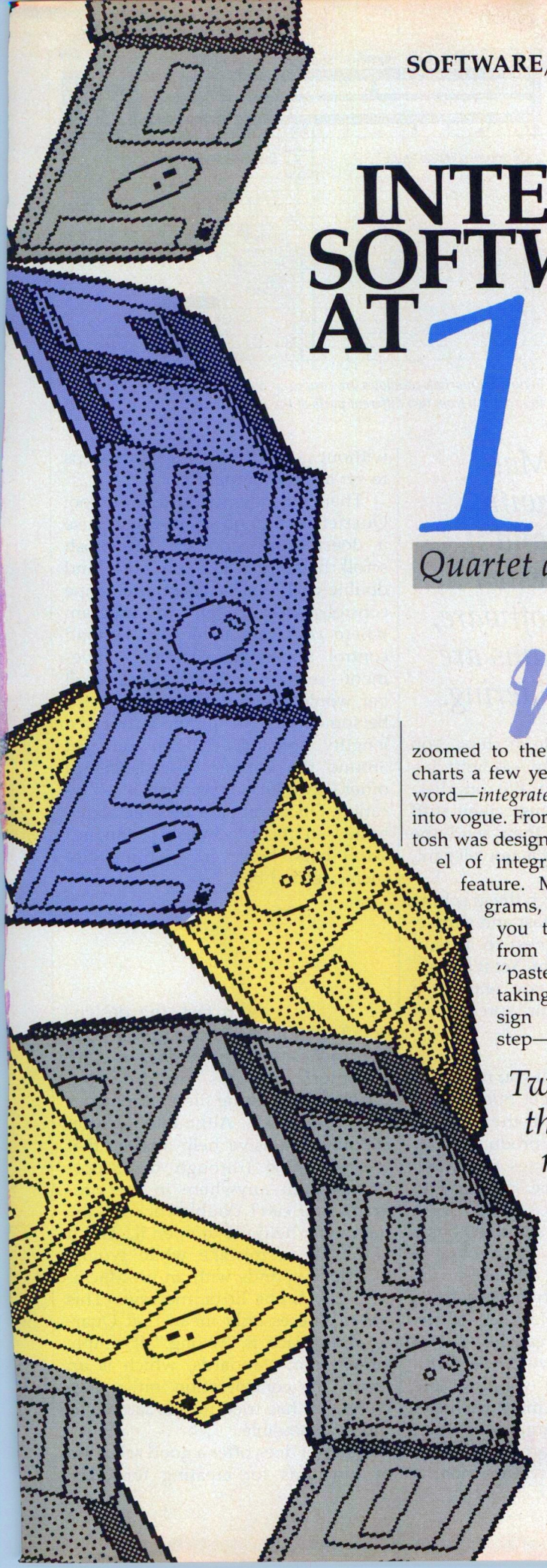
INTEGRATED SOFTWARE AT 128K

Quartet and Ensemble for the Macintosh



When Lotus 1-2-3 zoomed to the top of the software charts a few years ago, a new buzzword—*integrated*—suddenly came into vogue. From the start, the Macintosh was designed to offer a high level of integration as a standard feature. Most Macintosh programs, for instance, allow you to "cut" information from one application and "paste" it into another. But taking that integrated design to the next logical step—by actually combining several applications into one program—adds an entirely new layer of complications.

Two programs that don't need a 512K Mac to give you high-level integration.

Quartet and Ensemble were the first Macintosh programs to address those complications head on. Right up front, let's get one thing straight: Many people are going to compare these two programs to Jazz and Excel, the new standard-bearers in the world of integrated software. That's probably not a fair comparison, though. Jazz is meant to be a high-powered, multipurpose business program, and Excel is supposed to be a supercharged spreadsheet program. Quartet and Ensemble make simpler claims.

There's another big difference, too: Jazz and Excel both require a Macintosh with 512K RAM. Quartet and Ensemble can each work on a 128K system. If your Mac isn't fat with memory, and if you're interested in integrated software, these two programs are worth considering.

QUARTET

Instead of calling Quartet an integrated program, you would be closer to the mark if you thought of it as a spreadsheet program that includes text editing, graphics, and a database manager. So, if you're looking for a spreadsheet program that can do more than just calculate, Quartet may

LARRY EVANS

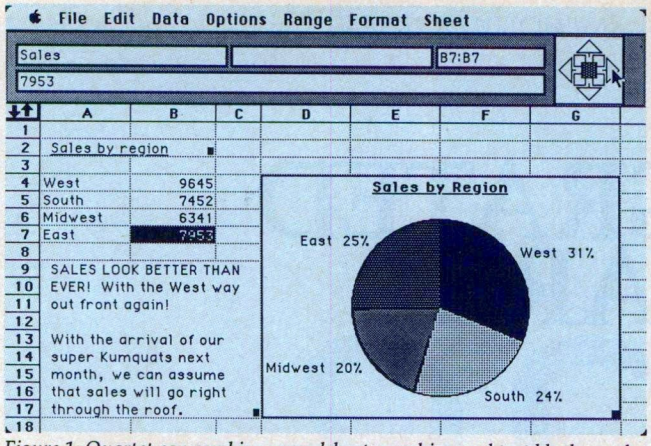


Figure 1: Quartet can combine spreadsheet, graphics, and text blocks on the same page. It performed the calculations in the pie chart automatically.

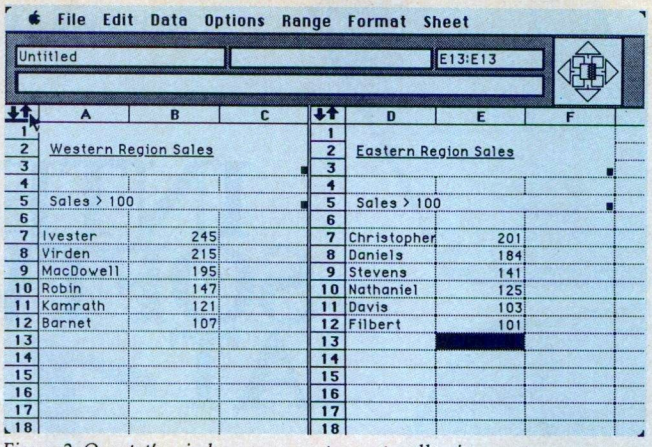


Figure 2: Quartet's windows are easy to create, allowing you to compare information from two different parts of the spreadsheet.

be a reasonable choice. If you're equally concerned about one of the other parts of the program, though, Quartet will probably miss the boat.

Let's consider the program's text editor. To enter text, you use the mouse to define a block of cells in the spreadsheet and then begin typing within the block. That's fine for creating a half-page memo or for annotating a spreadsheet, but not for writing an extended report. What's more, the things you can do within that block are extremely limited—for example, you can underline every word, but you can't underline any single word, and you can't mix type fonts or change the style of type.

As a graphics program, Quartet performs somewhat better (see figure 1). It lets you transform numbers from the spreadsheet into a pie chart, bar chart, or line graph. As you change numbers on the spreadsheet, the graph automatically changes, too. You can also easily stretch and shrink each graph, add labels, and annotate it.

Even so, Quartet's graphics fall way short of those from a dedicated graphics program, such as Microsoft Chart. Whereas a dedicated program may offer several variations for each graph type, Quartet gives you only one. You can't use scatter and other types of graphs or modify the graph patterns, and you can't cut a Quartet graph directly into MacWrite or some other word-processing application—a major limitation when you consider the program's relatively weak text editing. (You *can*, however, move it to MacWrite via a couple of steps. You perform a screen dump—⌘ Shift 3—to create a MacPaint file on disk; clean up the extraneous screen stuff with MacPaint; and then send the chart to MacWrite. It's not elegant, but it works.)

If your Mac isn't fat with memory, and if you're interested in integrated software, these programs are worth considering.

In short, even though the graphing portion of Quartet is fast and simple, it just can't hold up next to a dedicated graphics program. Yet it's probably adequate if all you want is a quick display of your spreadsheet data.

Solid Spreadsheets

Sometimes that's all you need—as long as the spreadsheet does everything you want—and the Quartet spreadsheet is a solid product, all by itself. It does a few things quite well. Windows, for instance, are easy to master (see figure 2). You can work with two sets of data simultaneously on the screen, in either a horizontal or vertical format, or you can move back and forth between two full-screen displays with a single click of the mouse. Other spreadsheets, of course, also have windows. With Quartet, though, the windows are easy to use and thus more useful to more people. For example, you can use windows to compare financial reports from two different months without going through a lot of steps to set up the comparison.

There's a down side to this, too: Quartet *needs* good windows because it doesn't use standard Macintosh scroll bars. Instead, you click and double-click in a diamond-shape control block to tell the program where you want it to go. Diamond control allows for diagonal movement—a good feature—but a scroll bar would have offered a less cumbersome way to jump through a lengthy spreadsheet. You can get around the Quartet spreadsheet in other ways, such as typing in a cell location. Once you have become accustomed to the Macintosh's standard scroll bars, however, anything else seems second best.

In fact, the designers of Quartet have changed several approaches that are standard in other Macintosh programs. You can't simply close an existing file or undo your last command. Although Quartet contains extensive help screens that are accessible (through the Apple menu) from anywhere in the program, you can't double-click on the name of a help file to open it. And if you make a mistake while typing, Quartet responds with an un-Macintosh-like Input Error message. This doesn't necessarily mean that Quartet's approach is "wrong." It simply varies from standards, which is an important consideration on a machine that has tried to standardize as much as possible.

Quartet does offer a good selection of functions for creating formulas.

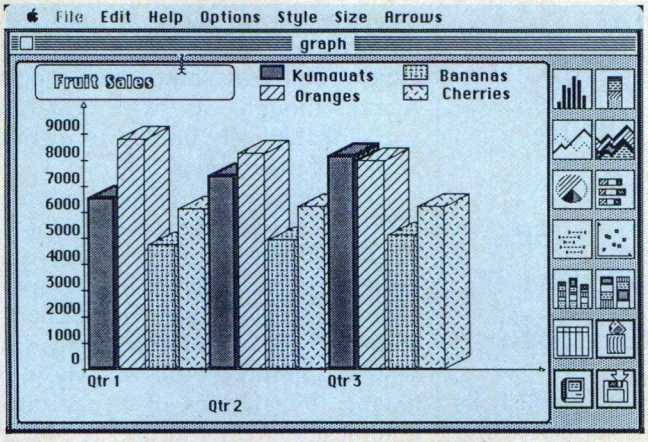


Figure 3: Ensemble's graphics capabilities are good, but its array of new icons can be confusing.

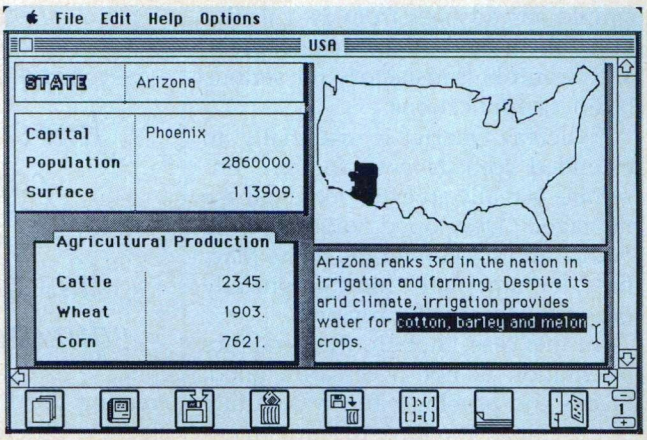


Figure 4: Ensemble allows you to mix text, graphics, and numerical information in the same data base form.

The basic financial functions are there, including net present value, future value, and payment. You can also use many mathematical functions, with the exception of logarithms and trigonometric values.

Several more handy tools are available through menu-bar options. When you paste a set of numbers from one part of a spreadsheet to another, Quartet can automatically add it to or subtract it from the numbers that are already there. This feature is useful when you want to build a summary report quickly from your spreadsheet data.

Quartet also makes it easy to insert a series of sequential numbers, starting at any base and building at any increment. Also, if you're using the database, which is developed right out of the spreadsheet, you can sort for both a primary and a secondary key, in either ascending or descending order.

In short, Quartet is a solid spreadsheet program that has some interesting, but incomplete, extensions. Experienced Macintosh owners may find some of its approaches a bit unsettling, but it packs a lot into 128K and can serve small- to medium-power-spreadsheet users quite well.

ENSEMBLE

Another 128K integrated program, Ensemble, heads off in a completely different direction from Quartet's. The most obvious difference between the two programs may surprise many business users: The Ensemble package doesn't include a spreadsheet program. You can build your own

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simple spreadsheet from its calculation functions, but that alone probably won't be satisfactory for serious business applications.

Whereas Quartet is essentially an extended spreadsheet program, Ensemble is really an extended database manager. Developed originally in France and sold under the name Macbase, it is among the most graphically oriented Macintosh programs.

In this case, though, that graphics orientation is not necessarily good. Here's the problem: To do anything in Ensemble, you have to learn an entirely new set of unlabeled, often confusing icons (see figure 3). Icons can be a great way to help people learn their way quickly around a program. Many of Ensemble's icons, however, actually defeat this purpose. Is it immediately apparent, for instance, what the icon shown in figure 5 means? Or is the difference between the two trash-can icons in figure 6 really obvious?

Figure 5: Ensemble's paste-up icon

Figure 6: Two trash-can icons from the Ensemble program

As if to underscore this point, Ensemble provides a menu option that translates icons for you. If you think about it, that's a bit back to front. The Macintosh icons are designed to offer a conceptual, graphic way to approach the computer. If you have to read through a lot of words before you can understand what the icons mean, you might as well just use words from the start or do as most Macintosh programs do and replace these icon-based commands with menu-bar options.

Graphics is also at the heart of what Ensemble does best, however. With it, you can create striking-looking reports that use effective-looking three-dimensional graphs, or you can maintain a database that combines both textual and graphic information (see figure 4).

Form Filling

To use the program, you start by creating a form made up of several types of fields, and then you enter information into that form. You have reasonable flexibility when you're

Quartet and Ensemble have a lot more capability than anyone else has managed to squeeze into 128K.

creating the form—you establish its size, the different types of fields, and the type of information that each field contains. You can select up to three fields for fast sorting.

These database forms, all by themselves, can make effective business forms. Ensemble's built-in graphics tools allow you to easily create forms that look good. You're not likely to make many mistakes either, because the program prompts you for necessary information as you enter each field.

After creating a form, you move to another part of the program to enter information into it. You can also set up calculations for any numerical entries, taking advantage of an extensive list of scientific and mathematical functions.

Once you've completed several forms, you can search through them via one of the quick-access sorting fields or by other specifications that you establish.

What's more, you can search for information based on a range of values—for instance, you can identify all customers with ZIP codes from Massachusetts. Up to three files—three sets of forms—can be simultaneously available while you're using the program. You can also establish connections between these separate files, as you do when you are using a relational database.

How Does It Stack Up?

So how does Ensemble stack up as integrated software? Let's look at a couple of its individual parts. As noted earlier, Ensemble doesn't have a spreadsheet program. You can simulate a spreadsheet function through its calculation functions, but even occasional spreadsheet users generally want more capability than that. The program's text functions fall short of the promised "word processing," but its text capability is slightly more powerful than Quartet's. You can't switch typefaces, you don't get many formatting commands, but you can modify the style of characters with italics, boldface, and other tools. Again, though, as with Quartet, you're realistically limited to memos and other short reports.

The program's business-graphics section offers a wider selection of alternatives, including vertical and horizontal bar charts, line graphs, area charts, pie charts, Gantt charts, and scatter graphs. Functionally, Ensemble's graphics still fall short of having the abilities of a dedicated graphics program, but they're powerful enough for almost anything you'd really want to do.

Do You Need Integration?

And that is really the bottom line of both of these programs. Quartet and Ensemble were both designed around core programs that were extended to handle additional functions. In both cases, these extensions fall short of what you can get from currently available stand-alone products. Stand-alone products, though, can cost you more, and getting separate products to work together can often be a lot more difficult than it sounds.

Quartet and Ensemble each provide that kind of integration, in a single package. They offer less power from each separate application than you might have hoped for, but they have a lot more capability than anyone else has managed to squeeze into 128K. ✚

J. Anthony Dirksen, a free-lance writer based in Silicon Valley, is a frequent contributor to A+.

PRODUCT INFORMATION

Quartet
Haba Systems
15154 Stagg Street
Van Nuys, CA 91405
(818) 989-5822
List Price: $199.95
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Ensemble
Hayden Software Company, Inc.
600 Suffolk Street
Lowell, MA 01854
(617) 937-0200
List Price: $299.95
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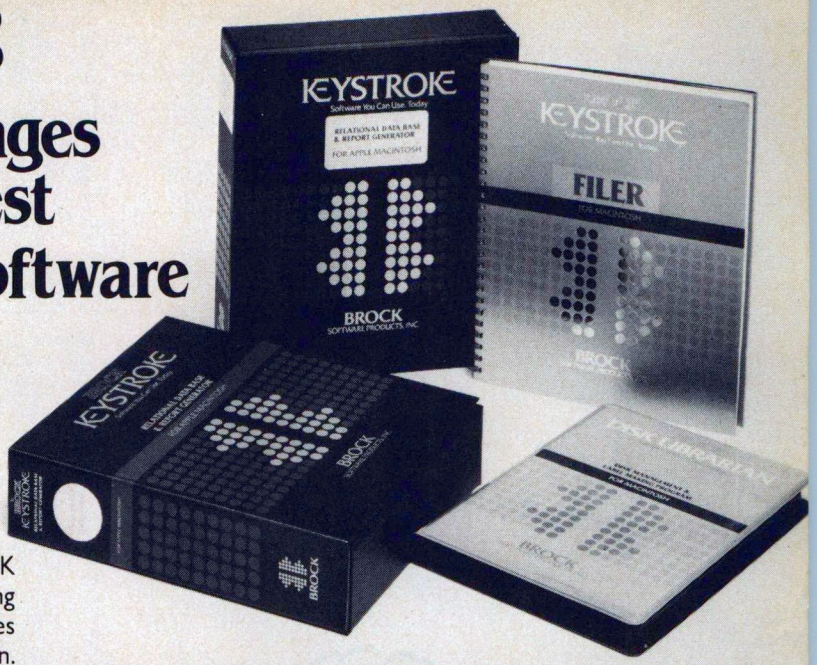

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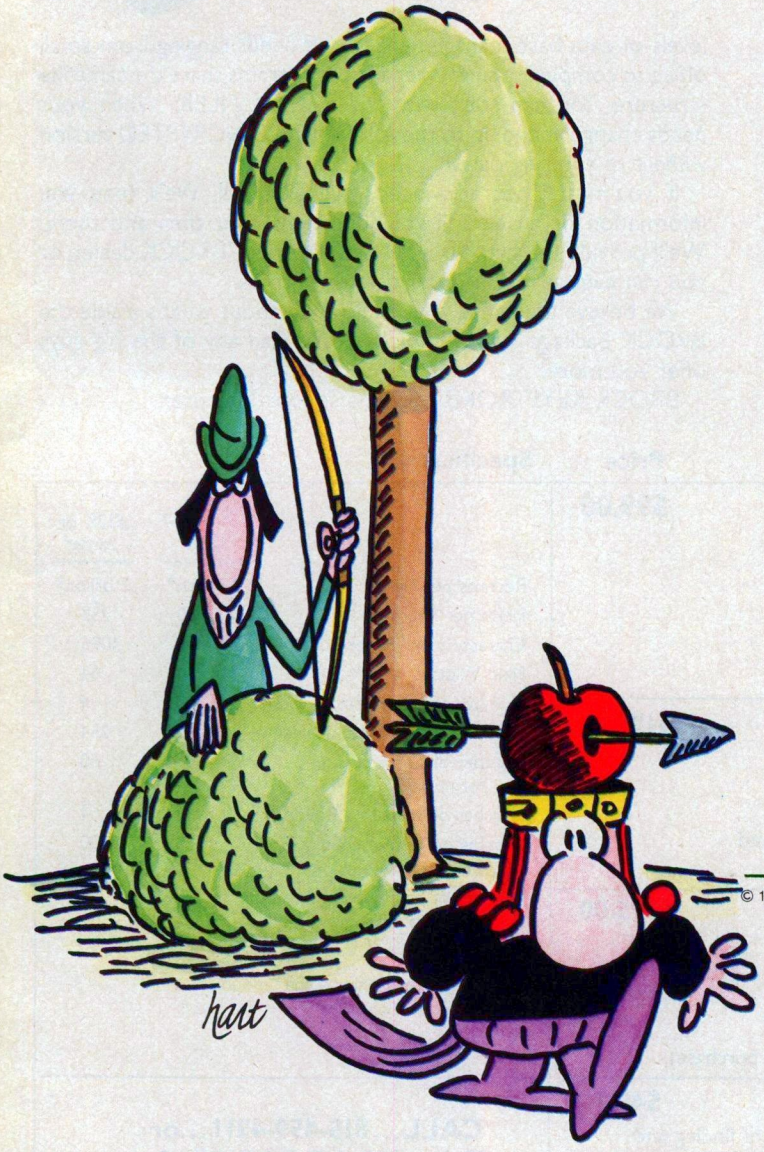

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MacPublisher, ReadySetGo, & PageMaker

Putting It All Together

Three software programs that bring electronic design, layout, and pasteup to the Macintosh

Up until now, the Macintosh has teased us with its possibilities of producing headlines, graphics, and other elements that go into making newsletters, advertisements, posters, greeting cards, price sheets, programs, reports, customized stationery, and countless other printed items.

Teased, because although all the elements were there—fancy typefaces, typestyles, and sizes, as well as versatile graphics—we haven't had the software to put all these components together in final form. Assembling different elements has usually meant working with the real limits of MacPaint or MacWrite or going the more traditional route of printing individual elements, cutting them to fit, and pasting them onto pasteup boards that go to a printer who photographs the boards and prints the final product.

Enter MacPublisher, ReadySetGo, and PageMaker, three pieces of Macintosh software that bring to the Macintosh electronic-design, layout, and pasteup capabilities. Now all the things you were trying to make the Mac do before become possible (or at least easier), and the results look better. Of course, if you can add a LaserWriter, you have a poor man's typesetting house. (All three programs work with both the Imagewriter and the LaserWriter printers.) Even if your publishing mission is as simple as producing a club newsletter and your equipment is limited to the Imagewriter, this software will give you a leg up on producing camera ready copy.

These pasteup programs offer four advantages over the traditional cut-and-paste process:

1. They substitute less-messy, less-tedious electronic cutting and pasting for traditional physical cutting and pasting.
2. They make precise placement of items easier by providing both visual and electronic guidelines. (With visual guides, your eye is the final judge of alignment. With electronic ones, the program takes care of precise alignment.)
3. When you are satisfied with the results on the screen, you print an entire page. You no longer have to worry about tiny, glued-on pieces of paper, perhaps containing a single headline or word, dropping off on the way to a commercial printer.
4. The programs allow you to play

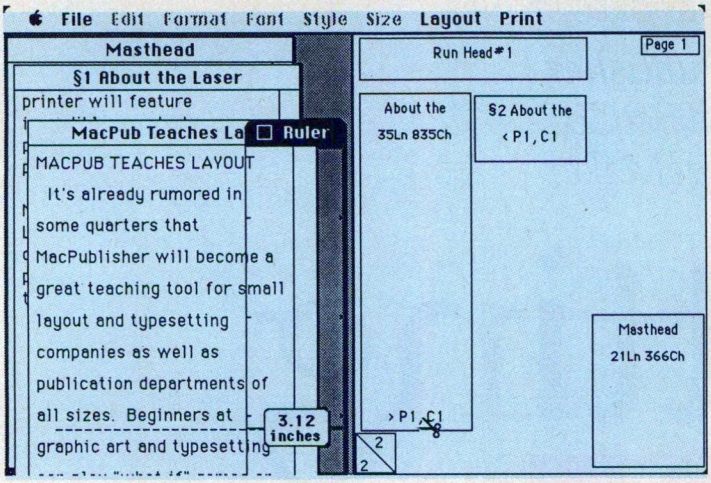

Figure 1: The MacPublisher screen gives you articles to work with on the left side and a "dummy" page (44% of true size) on the right.

what-if games with the pasteup process, arranging and rearranging the various pieces of a page on the screen until you achieve the results you want.

The programs get the job done, but each handles its tasks in a much different manner from the others.

MacPublisher

MacPublisher uses a literal approach, supplying you with a dummy page, scissors, ruler, and camera—all in graphic form, of course. (See figure 1 for a sample screen.) The dummy is a reduction of the real page to 44% of its original size. It shows type and graphic elements as rectangles with some identifying words on them, and you maneuver the rectangles on the page with the usual click-and-drag routine. You can also see a "mini-page" that looks like the final product, only reduced to 44% of its true size.

Scissors allow you to cut an article to the length you desire. When you pick the cut portion up (by pointing to the dark bar on top, in typical Mac fashion), it immediately shrinks to a rectangle 44% of its size so you can place it on the dummy page. What's more, a new article appears automatically, containing what's left of the one you just cut.

I was fascinated and impressed by the ruler, although using it was a little awkward. It's transparent, so you can lay it over the dummy page, an article, or a picture. Measurement is in inches, centimeters, lines, or pixels, as you prefer. You simply put the top of the ruler at the top of whatever you are measuring and then point and click at the spot where you want an exact measurement. The ruler gives a digital readout of the distance from its top at the spot you've chosen.

You use the camera to crop graphic elements you've brought into MacPublisher via the Clipboard. Think of it as a window over the Clipboard contents. You can adjust it like other Mac windows by pointing to the Grow box in the lower right corner and dragging it.

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You can bring text into MacPublisher via the Clipboard, but it will not retain any of the special formatting of the original. Thus, if a section is boldface, centered, or whatever, these characteristics will disappear in the transfer. You can restore them with the program's text-editing and formatting tools.

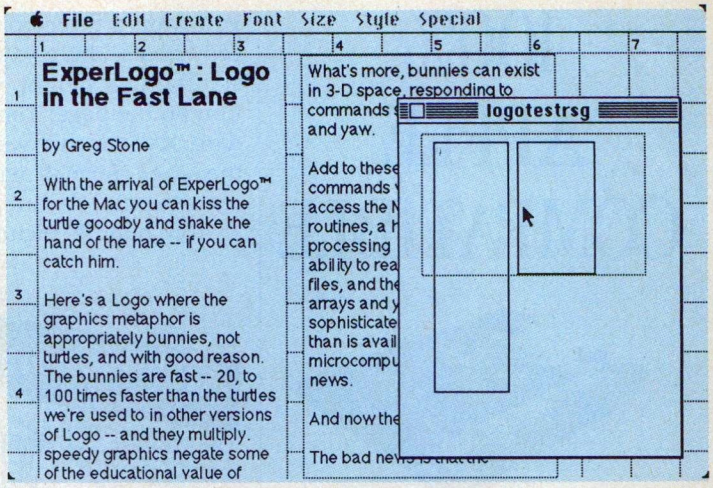

Figure 2: ReadySetGo uses a full-scale page and an unusual block system for layout. Rulers and a grid help you line up blocks of text and various graphic elements.

The easier way to deal with text in MacPublisher is to treat the program as the word processor that it is and write your text within the program. MacPublisher contains the familiar text-editing features of MacWrite, as well as the ability to adjust your text quickly to a full-page, half-page, or one-third-page width. (You can also work in a free form that allows for any column width you choose.)

ReadySetGo

ReadySetGo has a fascinating block approach to layout. In this program, you normally work with a full representation of the page, complete with a measured grid (see figure 2). Of course, on the Mac screen you can see only a portion of the page at a time, but you can use a Show Page feature similar to that in MacPaint to move to other portions of the page. The curious aspect is that every element on the page begins as a one-inch-square block.

If you want to enter text, for example, you can choose Text from the Create menu, and a one-inch-square block appears on the page. You can then either write (using the built-in word-processing capabilities) within this tiny block or dump a long article into it from the Clipboard. Of course, not much is visible in the block, but don't worry. All you do is grab the lower right corner and drag it in any direction you want. Your lines of text change to fit the new-size space. Similarly, you can grab an invisible handle at the top of the block and move it into position on the page.

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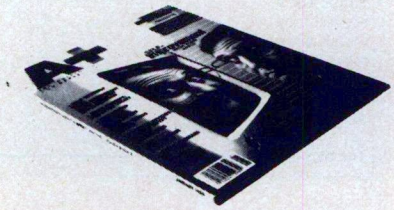

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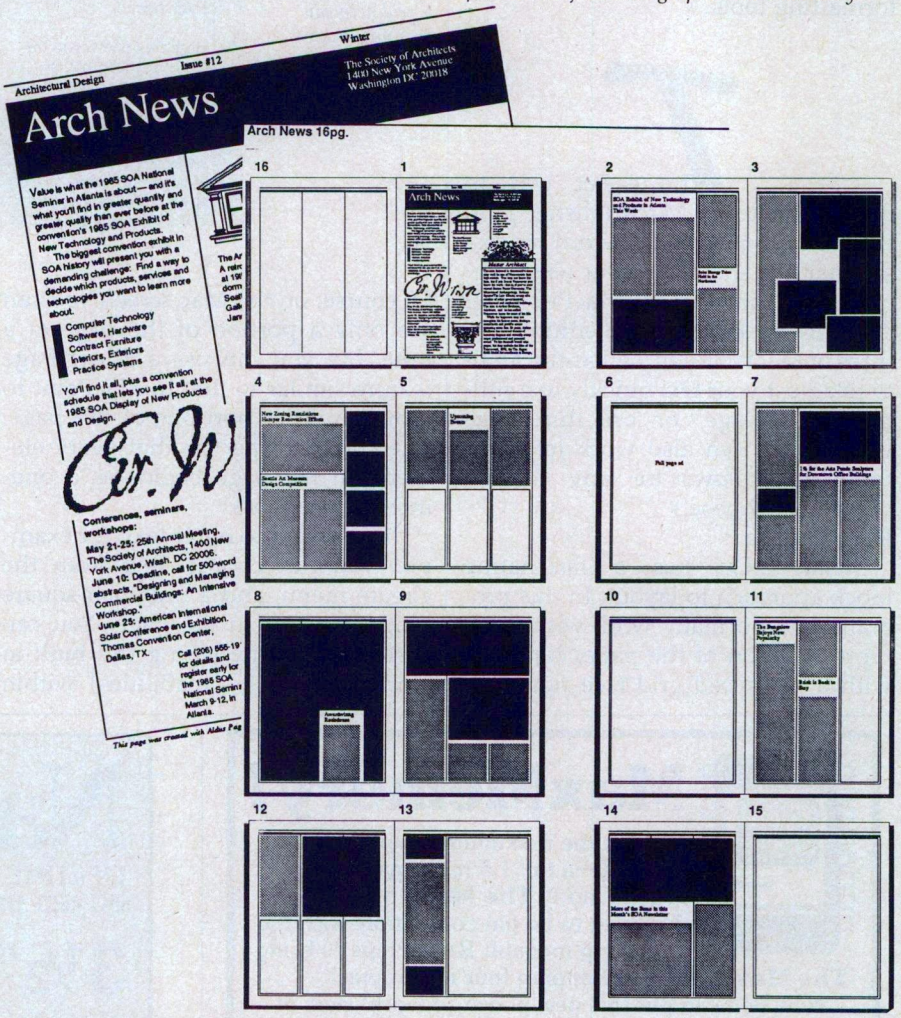
you want a three-column layout, you can create three equal columns by stating their height, width, and position on the page. You can create standard layouts this way and save just the page format without any contents—a nice feature.

You handle pictures in a similar fashion. Choose Picture from the Create menu, and the familiar one-inch-square block appears. Paste a picture into it from the Clipboard. In most cases, your picture will be much larger than the block. Don't worry—you can drag the block to the size you need. This process allows for some cropping of the picture, since you control the bottom and right side, but you cannot control the top and left side. Thus, the frame you are adjusting around your picture is permanently situated at the upper left corner of the picture.

Two additional types of blocks in ReadySetGo let you make frames of varying thickness and size to go around text or graphics, or to make solid shapes such as vertical and horizontal lines. You can shade both frames and shapes, but the choice of patterns is limited. As with the text blocks, you can use numbers to control all of these blocks.

Figure 3: PageMaker lets you reduce the page to fit the screen (left). You can work with several pages at a time (lower right), and the program gives you a large choice of shading for various solids. A "snap to" feature lets the program handle precise placement of text and graphics automatically.



PageMaker

I worked with a prerelease version of PageMaker, so part of this description deals with what is and part with what was promised but not actually present in the version I saw.

Although PageMaker has some built-in editing capabilities, the program is really designed to work in conjunction with other Mac software. The key to its use is the powerful Place command on the File menu. Choose it and you see a familiar dialog box offering you a choice of the files on your disk. You select a text file (created in either MacWrite or Microsoft Word) and open it, which returns you to the PageMaker page, where your cursor has turned into some-

thing that looks like a tiny block of text. It is, in fact, the upper left corner of your text file. Move it to where you want the text to begin and click, and the text flows into place.

You can move graphics into the program in a similar fashion, and you can crop them on all sides. They also can be enlarged or shrunk, as in MacPaint, or moved around on the page.

I found myself usually working with a representation of the page that was reduced to fit the Macintosh screen (see figure 3). The menu allows you to choose this option or a representation of the page at 50, 75, 100, or 200%. Other tools allow you to draw lines, rectangles, ovals, or rectangles with rounded corners. The program gives you a large choice of shading for various solids, and you can vary the thickness of lines and change their patterns by choosing from the Shades menu.

Finally, the program provides MacDraw-like rulers with a special twist. You can point to a ruler and drag a horizontal or vertical guideline. What's more, you can align text and graphics to them with a "snap-to" feature that lets the program handle precise placement automatically. You can set column guidelines from another menu by specifying the number of columns (up to 16 on a page) and the space between the columns. Columns set this way will all be the same size, but it's nice to be able to draw guidelines (you're allowed ten of them) directly from each ruler and set them where you want.

Distinguishing Features

MacPublisher is the only one of the three programs that works in a 128K machine, and its $99.95 list price is the lowest. Its major limitation is that it makes you create new files for each text block that is formatted distinctly. That is, if you want a paragraph to appear in boldface type and the rest of the article is plain, you have to create a separate file containing that paragraph and place it on the page as an individual element, a cumbersome process. MacPublisher does not provide a simple way for creating vertical and horizontal lines of varying thickness, but you can create them in MacPaint and import them

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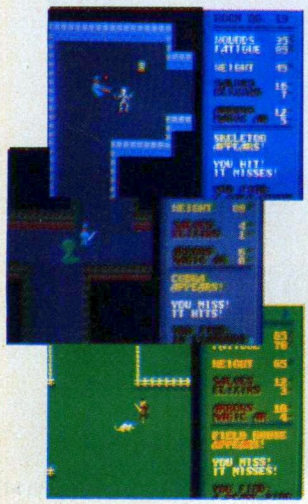

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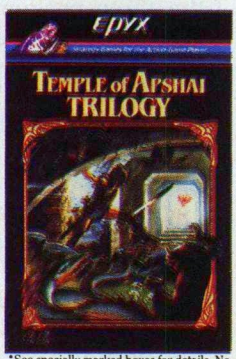

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MacPublisher seems to have the creation of newsletters as its basic goal. The transparent, digital readout ruler is an example of virtuoso programming and is useful for measuring the length of articles, but I would rather work with the ruled grid in ReadySetGo or the MacDraw-style rulers in PageMaker. One special feature that only MacPublisher offers is the ability to vary spacing or "leading" between lines. You can stretch out an article that doesn't quite fit a space or squeeze one that's a bit too long.

MacPublisher also lets you work with several pages at a time, as does PageMaker. It does a nice job of automatically keeping track of where the various pieces of an article are and automatically creates an index of your layout.

ReadySetGo's strong point is its simplicity, but since you deal with one page at a time, it seems best suited to doing advertisements, posters, and the like, rather than items involving a lot of text, such as newsletters. The process of importing material from the Clipboard and placing it in multiple columns on the page is tedious. The answer here is to take advantage of the built-in word processor and write your article within the program. An individual block of text can contain different typefaces, typestyles, and sizes, but if you want other formatting changes (such as centering one portion) you must create a separate block.

MacPublisher limits you to vertical treatment of a normal 8½ × 11-inch sheet of paper, but ReadySetGo and PageMaker are more flexible. They let you set page size from the Page Setup dialog box, which allows the choice of U.S. Letter, U.S. Legal, A4 Letter, or International Fanfold in either Tall or Wide. This feature is especially useful if your goal is to create a pamphlet by setting an 8½ × 11-inch sheet of paper to its wide orientation and then dividing it into three panels for folding.

A major limitation of ReadySetGo is that you must deal with the full page and can change your view of part of the page only by sliding the dotted rectangle within the Show Page mode. The program would be significantly easier to use if you had a "hand" tool, as you do in MacPaint, that allowed you simply to slide the page within the main window.

PageMaker is the most advanced of the three packages (or perhaps I should say *will be* the most advanced, assuming it develops as its maker claims), and it should be, with a $495 price tag. It offers the easiest interface with other Mac files. Although it doesn't handle files from all Mac programs, it does handle those from MacWrite, MacPaint, MacDraw, and Microsoft Word. It also supports the Clipboard. It is the most versatile of the programs, allowing different paper sizes (as does ReadySetGo). It has the best way of handling graphic elements and the easiest placement of graphics and text on the page, and it generally seems the most intuitive. Other PageMaker features provide for insertion of pages; insertion of columns within a page; measurement in picas, centimeters, or inches; and the creation of "master pages" that

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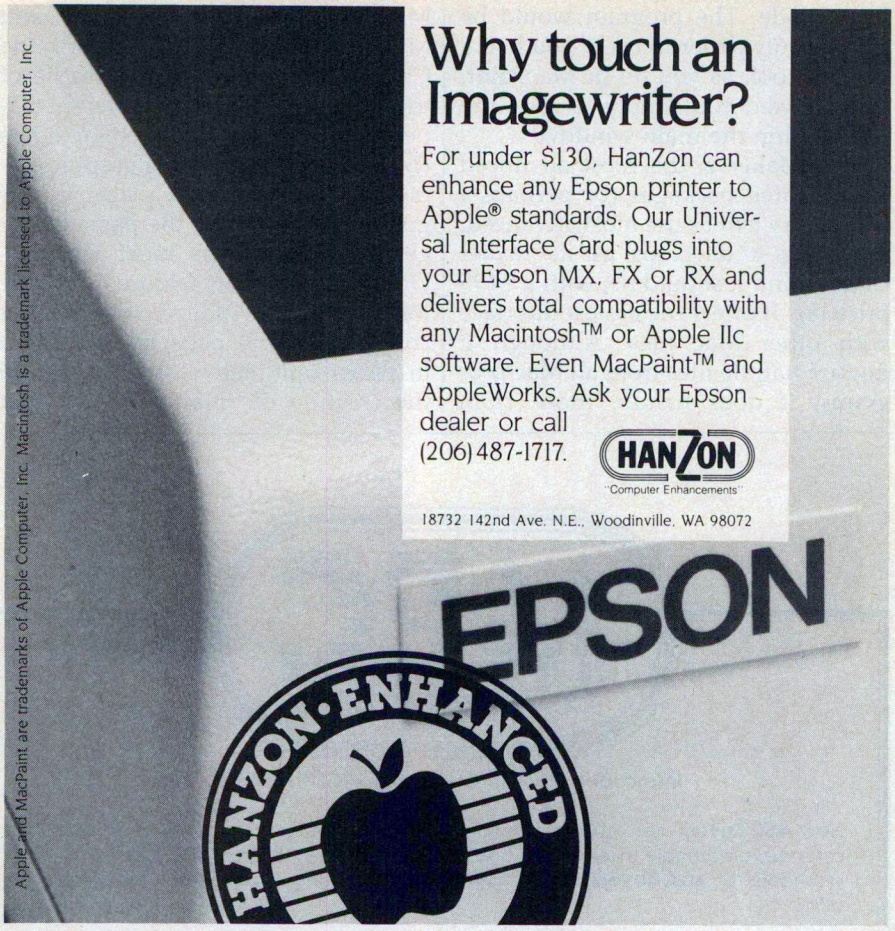

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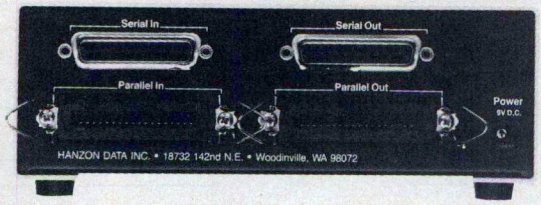

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We have seen only the beginning of the Mac's entry into the publishing world.

carry certain elements and/or formatting throughout a document.

MacPublisher offers some automatic alignment features in a full-measure, two-column, or three-column format. ReadySetGo leaves alignment to your eye (it provides a grid of half-inch squares) or to numeric specifications. That is, you can specify precisely where on a page you want something placed and provide exact dimensions for it. PageMaker provides rulers and automatic guidelines.

So which of the three is the best? If price is no object and you have a 512K Mac, I'd go with PageMaker. In a business environment, its ease of use will save money over the long haul, and I especially like the ease with which you can bring documents into it. If price is a concern, however, read on.

If you have just a 128K Mac, there's no choice. Get MacPublisher and be happy. Although the program has its limitations, you can't beat the price, and you will get the job done. The manual is thorough, and if you walk through the examples, you shouldn't have any serious problems understanding how to get the most out of it.

If you have a 512K Mac but a limited budget, the choice is a little more difficult. I liked ReadySetGo's ease of use, but I would look seriously at MacPublisher if my basic goal were to produce newsletters containing fairly long articles—especially if I anticipated articles going more than one page. If my goal were to produce cards, stationery, small posters, or fliers—anything that could fit on a single page—with longer items of only occasional concern, I'd give the nod to ReadySetGo.

Whatever your choice, I have the feeling that we've seen only the beginning of the Mac's entry into the publishing world. The most serious limitation I encountered in testing these three programs didn't lie with the software, but with the Mac itself. Each program had to find a way to contend with the Mac's small screen.

It's hard to imagine these programs without the Mac's graphics, icons, and mouse, though—so look for the Mac and this new software to have a significant impact on how we produce printed documents. ✚

Editor's note: Shortly before the publication of this issue, Greg Stone provided this additional information.

As this article goes to press, Manhattan Graphics is preparing a new release of ReadySetGo, Version 2.0, that introduces some major changes. The most important are the abilities to create multipage documents (up to 16 pages) and to bring text prepared on Microsoft Word or MacWrite directly from a file into ReadySetGo without using the Clipboard. The new version also provides a method for making text flow from one block to another, even when the other block is on another page, so it is relatively easy to adjust a layout to accommodate text. These features, in addition to several other small changes, make the program a better value than it was originally. Although it still falls short of PageMaker in some areas, it is a lot of program for the money.

Greg Stone is a free-lance writer and director of community relations at Southeastern Massachusetts University. He has contributed to numerous science and computer magazines.

PRODUCT INFORMATION

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MacTips

Suggestions from our readers

EVENLY SPACED LETTERS

Here is a way to make evenly spaced letters in a table that uses variable-pitch fonts, a technique that is useful for word-search puzzles, labels on graphs, and the like. Using MacPaint, select the A box and choose a font, size, and style to suit your needs. Turn on the grid under Goodies, select Align Middle from the Style menu, and position the I-shaped cursor where you wish to start typing. If there is more than one row in the column, it is easier to type down each column by typing the character, pressing Return, and repeating the same routine until you have gone as far down as you need to go or until you have reached the bottom of the screen. Then position the cursor at the top of the next column and type that column. Continue until your table is finished (see figure 1). You will have evenly spaced letters of varying width neatly centered below or beside previous ones.

To extend typing in the same column below the bottom of the screen, select the hand and drag the "picture" up for more room. Then select the A again, place the cursor on the last character in the column you are extending, type that character again to see that it is perfectly aligned, press Return to drop to the next typing position, and continue until you are finished with that column.

After you are done with the table, you can easily return to any character and replace it without positioning problems. It may require removing a dot or so with FatBits if the previous letter was wider than the new one.

If you move a portion of the screen with the Lasso or Dashed select box with the grid turned off, the new table location will probably not be in correct alignment when you turn the grid on again.

It is better to try to move the screen with the hand or leave the grid on while moving the selected part of the screen. If you need to use the grid again for positioning more letters, you can select the necessary portion of the screen and move it around until you get it back into correct alignment. You can verify a position by turning on the grid, checking the position of the I cursor on a character, and typing it over to be sure it does not move.

Another nice thing is that the grid affects the line spacing so that typed lines line up with the invisible grid. If you are filling in lines on a form or boxes you've drawn with the grid, it sometimes helps to leave the grid on while doing that typing.

Kenneth H. Brown
Gloversville, NY

THE MAC'S EXPRESSIVE FACE

Ever wonder what the face on the Mac means when you fire up your machine? Well, it shows a lot of information, if you know how to interpret its messages. Let's start by taking a look at the normal, smiley face (see figure 2).

This figure shows that face in its normal configuration when everything, the RAM chips in particular, is working properly. Although it's not apparent, that face comprises 32 vertical line segments, with 2 segments contributed by each of the 16 RAM chips. In fact, the integrity of that face tells you that all 16 RAMs are working properly; if they were not, 2 segments would be missing. Now let's look at figure 3.

Notice the difference from the first figure. Now we have stippled side panels, a frowning face, and two split bars. Also, although it's not apparent in the figure itself, the background around the face turns black (it's not the stippled pattern that usually surrounds the normal face). The quadrant separators are my own addition to the figure.

Now consider the locations of the RAM memory chips located on the main logic board. They are in 2 hori-

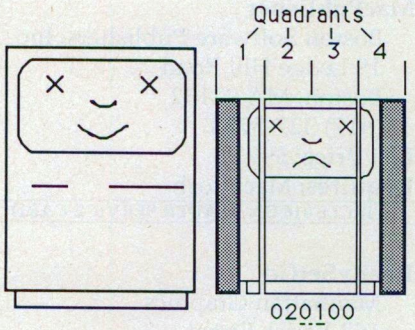


Figure 2 (above left): The Macintosh "face" in its normal configuration shows that everything is working properly.
Figure 3 (above right): The frowning face indicates a problem with the Mac's RAM memory.

Figure 1: This word-search puzzle shows the even letter spacing you can get with variable-pitch fonts.

	Columns							
	5	6	7	8	9	10	11	12
Rows F	020001	020002	020004	020008	020010	020020	020040	020080
Rows G	020100	020200	020400	020800	021000	022000	024000	028000

Figure 4: This chart shows the RAM-chip rows and columns with code numbers that indicate faulty chips in each location.

zontal rows, F and G, and 8 vertical columns, numbered 5 through 12. Since each chip contributes to 2 vertical sections of the face, it is only logical that if one of those chips were bad, or even missing, representative sections of the face would be missing. Such is indeed the case. Quadrants 1 and 3 (in figure 3) represent the chips in row G and quadrants 2 and 4 stand for the chips in row F.

The specific vertical dropouts by a bad chip start at the right of a quadrant and move left as the chip location moves from column 5 to 12. In other words, if the RAM chip in location F5 were either missing or faulty, then the corresponding quadrant in figure 3 would be missing (the vertical lines on drawing). But there is an even better way to diagnose memory problems.

Under the frowning face of a Mac with faulty memory is a six-digit code number, underlined by a segmented, moving line that calls your attention to the vital portion of that number. The first two digits are 02 and don't apply here. The next two digits tell which chips may be faulty in row G. Should those two digits be 01, as in figure 3, the faulty chip would be located at G5 (the number would read 020100). Those two center numbers would be 02 if the next chip were bad (at G6); 04 if at G7; 08 if at G8; 10 if at G9; 20 at G10; 40 at G11; and, finally, 80 if at G12. The numbers even tell you if there are two or more bad chips by adding the designated numbers together in hexadecimal arithmetic; i.e., if the first two chips (at G5 and G6) were bad, the new number would be 03 (a combination of 01 and 02). If the faulty chips were located at G11 and G12, the new number would be hexadecimal C0 (a combination of 40 and 80), and so on.

The last two digits in the display have to do with the chips in row F. If the RAM in location F5 is bad, the number will read 020001. The same progression occurs across that row (as in row G) to tell you which chip is bad. If the chips in F10 and F11 were bad, for example, the number would read 020060 (a combination of 020020 and 020040).

Now, how does this information help you Mac aficionados? If your Mac ever greets you with a frown, you can go see your dealer and tell him which chip is bad (boy, would that get his attention); or, if you are a genuine hacker, go in there and fix it yourself. Also, those of you who do upgrades can now easily tell which chip is giving you trouble.

Finally, figure 4 is a chart showing the RAM-chip rows and columns and the code number that appears to indicate a faulty chip in each location.

Norman Borge
Fort Worth, TX

ROUNDING TIP

Here's a quick tip for fellow users of Microsoft File. With only arithmetic functions (+, −, ×, and ÷) available in computed fields, I was desperate for a rounding function. I discovered that the numbers are carried to 14 significant digits. Adding 10^{14} and then subtracting 10^{14} results in a number rounded to the nearest 10. 10^{15} gives you a number rounded to the nearest 100, and so on (see figure 5).

Doug Harlow
Altadena, CA

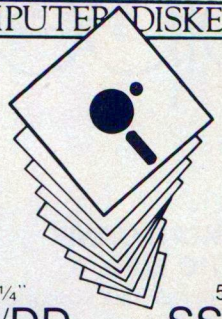
Formula: (A*B)+1E14-1E14

MS File Rounding

	A	B	Rounded Product
1	5	7	40
New			

Figure 5: Formula for rounding numbers in Microsoft File

GT ENTERPRISES
COMPUTER DISKETTES



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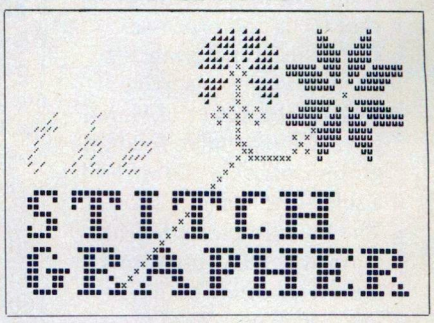

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▸ FISCHERTECHNIK ROBOTIC KIT

The fischertechnik Robotic Computing Kit contains integrated components to introduce you to the world of robotics and computer control. The basic kit includes parts such as two minimotors, two gears, one electromagnet, three lamps, eight pushbuttons, and two potentiometers. It also includes a computing interface comprising four outputs for connecting motors, lamps, and so on; eight digital inputs; two analog inputs; and a program disk.

Easy-to-understand instructions and wiring plans are provided for building such scale models as a traffic light with pedestrian button, a machine tool that feeds and processes materials, a materials lift, an aerial rotor, a sorting system, the Tower of Hanoi puzzle, a teachable robot, a graphic panel, a plotter, and a solar-cell tracking station. The kit's simple and clearly defined BASIC programs are designed for both novices and experienced programmers. *(List Price: $199)*

Requires: Apple II, II Plus, or IIe

fischer America, Inc.
175 Route 46 West
Fairfield, NJ 07006
(201) 227-9283

CIRCLE READER SERVICE NO. **500**

▸ BEAST WAR

Microcomputer Games has released BeastWar, an easy-to-learn science-fiction game that combines the tactical skills of chess with arcade-style combat. The game is set in the distant galaxy of Alaxis, inhabited by several strong but warring races. The tribal leaders have decided to settle disputes in a tournament that will be won through the use of clever strategy. The tournament will be fought using semi-intelligent beasts controlled by their masters. Beast War has two standards for play—the Terran Common rules and Alaxian Universal rules. *(List Price: $25)*

Requires: Apple II, II Plus, IIe, or IIc; one disk drive

Microcomputer Games, Inc.
A Division of The Avalon Hill Game Company
4517 Harford Road
Baltimore, MD 21214
(301) 254-9200

CIRCLE READER SERVICE NO. **501**

▸ EPSON FX-85 AND FX-185 PRINTERS

Epson America has introduced two new printers—the FX-85 and the wide-carriage FX-185—in its FX series of dot-matrix printers. The 80-column FX-85 and the 136-column FX-185 offer both draft copy at 160 characters per second (cps) and near-letter-quality copy at 32 cps, and users can switch between the qualities with only a press of a button.

The printers also feature 9 × 9 dot-matrix characters, logic-seeking bidirectional printing, 96 ASCII and 11 international character sets, a built-in set of IBM character sets, and proportional-space printing.

Also standard are horizontal and vertical tabulation and short-paper tear off. The products come with an 8K print buffer. Both printers offer friction and pin feed, and the FX-185 also has tractor feed. Optional cut-sheet feeders are also available, as are upgrade kits for present owners of FX-80, FX-100, FX-80+, and FX-100+ printers. *(List Price: FX-85, $499; FX-185, $699; cut-sheet feeder for FX-85, $269; cut-sheet feeder for FX-185, $319; upgrade kit, $85)*

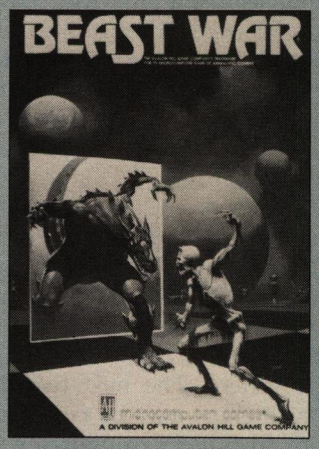
Epson America, Inc.
2780 Lomita Blvd.
Torrance, CA 90505
(800) 421-5426
in CA (213) 539-9140

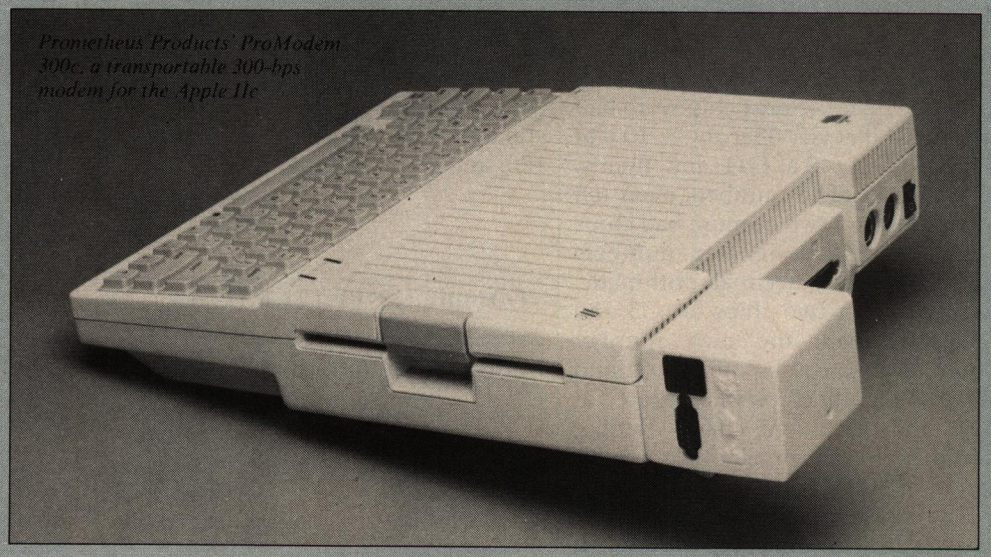
CIRCLE READER SERVICE NO. **502**

▸ PROMODEM 300c FOR THE IIc

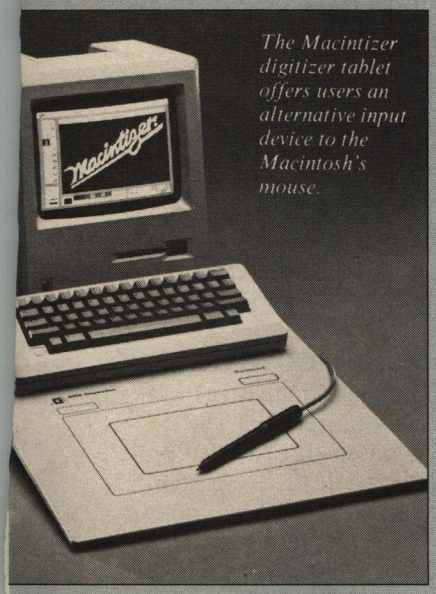
Fully contained in a plastic, injection-molded case, the new ProModem 300c attaches to the modem and game-port connectors on the IIc. The 300-bps modem allows free access to the game port while it is installed and requires no power cables. It uses a CMOS microprocessor to perform modulation and demodulation tasks and to provide a high level of intelligence. Features include auto-redial on busy, a "call waiting bridge," and the ability to

Beast War, a science-fiction game from Microcomputer Games





Prometheus Products' ProModem 300c, a transportable 300-bps modem for the Apple IIc



The Macintizer digitizer tablet offers users an alternative input device to the Macintosh's mouse.

use rotary (pulse) or touch-tone dialing. The modem comes with Prometheus' ProCom-A, a ProDOS communication-software package that features a communications and a file-transfer menu. *(List Price: $199)*

Requires: Apple IIc

Prometheus Products, Inc.
P.O. Box 4156
Fremont, CA 94539
(415) 490-2370

CIRCLE READER SERVICE NO. **503**

MAC

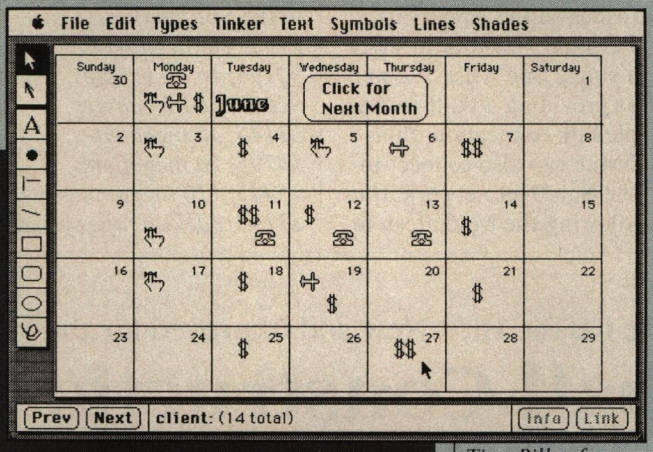
▶ MACINTIZER

The Macintizer is an electromagnetic digitizer that plugs directly into the mouse port of the Macintosh. Because the computer assumes you are using a mouse, you can operate the Macintizer without modifying the operating system or application software. Advantages of the digitizer over the mouse include the ability to work through dirt and contamination, it does not skip, it allows finer control because you use a stylus, and it works in an absolute coordinate mode. You can also trace maps, drawings, or any nonmetallic material up to ½-inch thick, and you can reproduce artwork in a 1:1 scale or select the tablet's 33% reduction mode to shrink documents larger than the computer's screen. *(List Price: $599)*

Requires: Macintosh

GTCO Corporation
1055 First Street
Rockville, MD 20850
(301) 279-9550

CIRCLE READER SERVICE NO. **504**

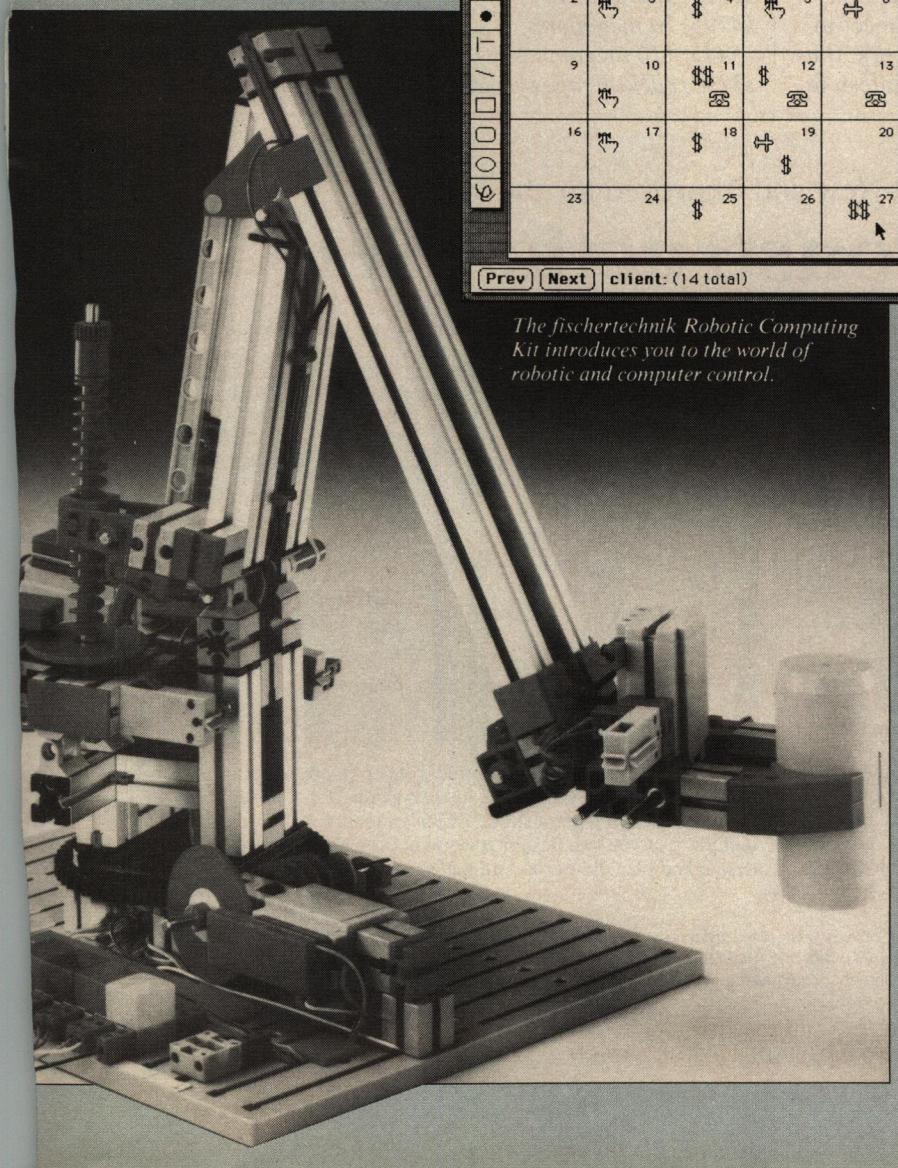


Time Biller, from Innovision, is a set of Filevision templates for the Macintosh.

MAC

▶ TIME BILLER

Designed to simplify record keeping for people who bill clients for their services by the hour or by the service performed, Time Biller is a set of Filevision templates



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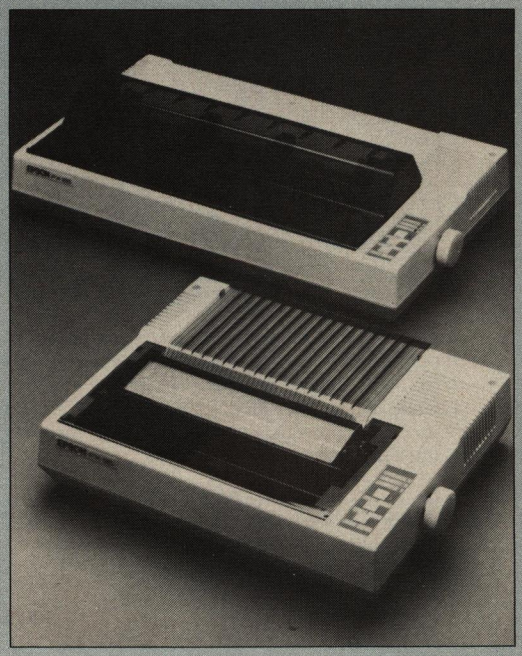

The Epson FX-85 and FX-185 dot-matrix printers can produce both draft-quality and near-letter-quality copy.

for the Macintosh. Each template is a month-at-a-glance calendar that includes icons for four data types—a "to do" item, a trip, a telephone call, or a client billing. The user places copies of the desired data type on the calendar for each event to be recorded and then fills in the form associated with that event. Time Biller also allows users to automatically generate invoices, lists of calls to make, lists of things to do, and travel itineraries. *(List Price: $14.95)*

Requires: Macintosh

Innovision
P.O. Box 1317
Los Altos, CA 94022
Written inquiries only

CIRCLE READER SERVICE NO. **505**

▶HARDWARE

MAC

▶SUN*MAC DISK MASS STORAGE

A networking and universal mass-storage system for the Macintosh, Sun*Mac Disk provides data storage of 10, 16, 25, 45, 70, or 110 megabytes per disk. Two configurations are possible: a single-user configuration or a networking configuration that allows up to 31 Macintoshes on the AppleTalk Personal Network to share a single Sun*Disk. As well as providing a built-in AppleTalk connection, Sun*Mac can also connect to the Sun*Net network, thus allowing the Macintosh to communicate with other popular microcomputers. Also available are Sun*Safe, a random-access backup tape system that has a removable 26-megabyte tape cartridge; Sun*Server, a printer server that has two RS-232 ports to accommodate up to two printers; and Sun*Share, which provides a common storage area that allows all users to transfer files between different operating systems, disk formats, and to the Sun*Server. *(List Price: 10 megabytes, $2195; 16 megabytes, $2695; 25 megabytes, $3145; 45 megabytes, $4795; 70 megabytes, $5445; 110 megabytes, $7195; backup tape system, $1350)*

Requires: Macintosh

Sunol Systems
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(415) 484-3322

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▶HARDWARE ACCESSORIES

▶THE MOUSEPAD

Birchem Computer Products has released The Mousepad, a pad that provides a dustfree, resistant surface on which to run your computer's mouse. The pad keeps the mouse free of dust and oil and provides a surface that grips the mouse's ball, thus reducing the number of mis-

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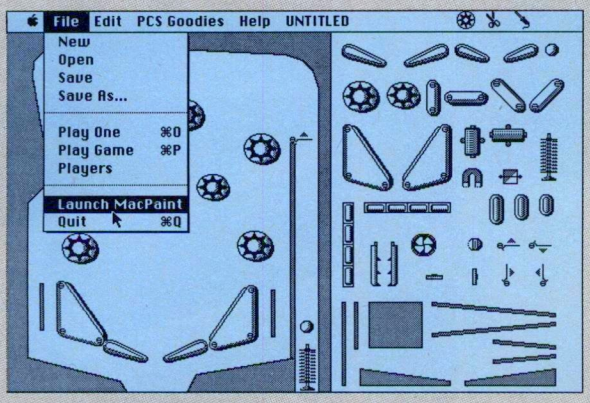

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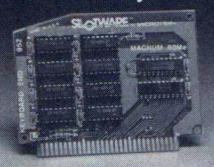
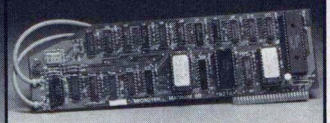


MAG

2. 80 Column Card for Apple II & II +



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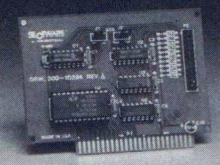

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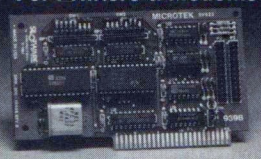

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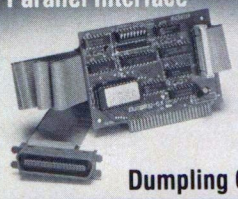

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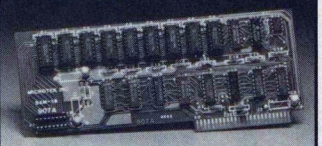
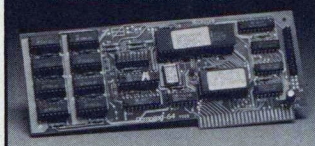


BAM 16

7. Buffered Graphics Parallel Interface



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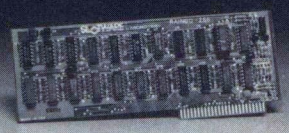

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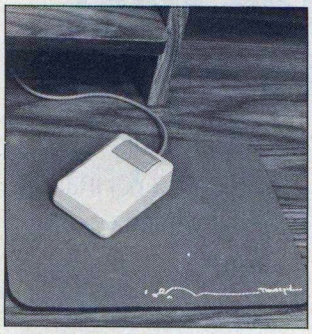

The Mousepad provides a dustfree, resistant surface for a mouse.

▸HARDWARE/ SOFTWARE

MAC

▸MACBOARD

Outstanding Software has released MacBoard, a full-featured board that enables Macintosh users to set up an electronic bulletin-board system and so receive and post messages and mail via modem. The board features multiple subboards, sysop utilities, general sections, time/date stamping, and up/downloading. Because MacBoard's software is written in BASIC, users can modify, change, and add features to the product. *(List Price: $50)*
Requires: Macintosh, 128K or 512K RAM; Hayes-compatible modem; Microsoft BASIC, Version 2.0 or later
Outstanding Software
1174 Barnes Street
Franklin Square, NY 11010
(516) 328-3433
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▸SOFTWARE

II SERIES

▸WINDOWS

A machine-language utility program for BASIC programmers, Windows works with Applesoft BASIC to give the Apple II series of computers windowing capabilities. Using the ampersand vector, the program adds ten new commands to BASIC that let you open or close a window, split the screen horizontally or vertically, use special effects and center-screen wipes, partially erase the screen, and more. The program is easy to use and requires no knowledge of machine language. It comes with documentation, a demo program, and two versions of Windows—one for DOS 3.3 and one for ProDOS. *(List Price: $19.95)*
Requires: Apple II, II Plus, IIe, or IIc; 48K RAM, one disk drive
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▸ MICROPROSE SIMULATION SOFTWARE

MicroProse Software has introduced three new simulation programs—AcroJet, The Advanced Flight Simulator; Silent Service, The Submarine Simulation; and Gunship, The Helicopter Simulator.

AcroJet, a sequel to the company's Solo Flight program, allows users to pilot their own BD5-J jet. One to four players can compete with each other and with MicroProse's fighter pilot Major Bill in a decathlon of sport aviation events that includes spot landings, ribbon cuts, acrobatics, and other high-performance maneuvers. The simulation features 3-D graphics; has built-in CRT displays for major instrument systems; and allows full maneuverability, including rolls, loops, and Immelmanns.

Silent Service, a simulation of World War II submarine combat in the Pacific, features simulation from various sub locations including the engine room, conning tower, and ship's bridge; realistic combat with both 5-inch gun and Mark XIV torpedoes; and strategic play using maps and charts. Players can select "reality levels," which gradually increase in complexity. The program provides a wide selection of historical scenarios, and offers graduated enemy skill levels and automatic time scaling.

The third program, Gunship, simulates the AH-64 Apache attack helicopter and features multiple weapon and navigation systems and 3-D graphics that enable the pilot to maneuver among and between multiple buildings and terrains. As the Gunship pilot, players can accept the assignment of one of seven missions, including anti-tank sorties, rescue missions, and covert operations.

MicroProse Software and Cessna Aircraft Company are also sponsoring a Learn to Fly contest in which winners have the opportunity to qualify for a pilot's license, a solo package, or an introductory flight on a Cessna airplane. Each box of MicroProse's Solo Flight, F-15 Strike Eagle, Kennedy Approach, and AcroJet contains details of the contest. *(List Price: $34.95 each)*

Requires: Apple II, II Plus, IIe, or IIc; joystick

MicroProse Software, Inc.
120 Lakefront Drive
Hunt Valley, MD 21030
(301) 667-1151

CIRCLE READER SERVICE NO. **533**

▸ ULTIMA II

Sierra On-Line has released a Macintosh version of its fantasy role-playing game Ultima II. This version of the game resides on one side of a 3½-inch disk and makes use of the Macintosh's special features. Users can access statistics and inventories of their characters from pull-down menus, and the mouse provides more freedom of movement than is available in keyboard versions of the program. *(List Price: $59.95)*

Requires: Macintosh

Sierra On-Line, Inc.
Sierra On-Line Building
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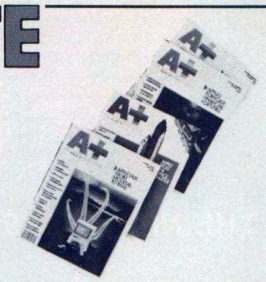

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MAC

ICON SWITCHER

PBI Software has released Icon Switcher, a Macintosh program that enables users to change, design, or switch application, document, and picture icons with a few clicks of the mouse. The program comes complete with more than 20 practice icons and a tutorial.

For users who require more than these 20 icons, the company has also produced two Icon Libraries. Icon Library #1 is a collection of more than 100 business and utilities icons, and Icon Library #2 contains more than 100 fun-and-games icons. Users can change all of these icons with the Icon Switcher.

(List Price: $19.99 each)
Requires: Macintosh
PBI Software, Inc.
1155B-H Chess Drive
Foster City, CA 94404
(415) 349-8765
CIRCLE READER SERVICE NO. **512**

II SERIES

KEYCHART FOR THE APPLE II

A version of SoftKey Software's KeyChart business-graphics program is now available for Apple II computers. The program has on-screen page-layout preview capabilities and supports more than 20 plotters and printers.

It can produce combination bar, line, symbol, pie, x-y, horizontal bar, and scatter charts from data compiled by application software such as Lotus 1-2-3, Symphony, SuperCalc, VisiCalc, Multiplan, and Framework. *(List Price: $375)*
Requires: Apple II, IIe, or IIc
SoftKey Software Products, Inc.
18480 Decatur Drive
Monte Sereno, CA 95030
(408) 395-1974
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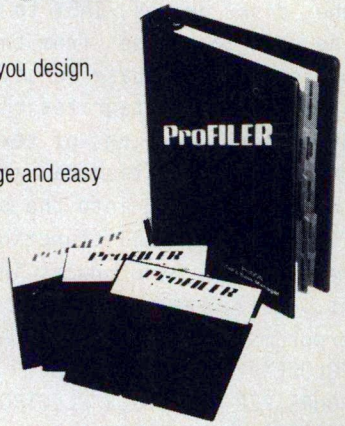

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SERIES

ADVENTURE CONSTRUCTION SET

Adventure Construction Set, a program that allows users to design graphic and text adventure games for one to four players, is now available for Apple II computers. The program actually comprises three products on one disk: Adventure Construction Set; Rivers of Light, a complete adventure set in Egypt and the Near East during the Dawn of Man; and Land of Aventuria, a tutorial that contains seven miniadventures. Players can use the set to create characters and define their limitations, supply music and sound effects, and build a variety of interior and outdoor locations. Although players can build any type of game, three ready-made adventure formats are available—fantasy and medieval; spies and mysteries; and science-fiction. *(List Price: $49.95)*

Requires: Apple II, II Plus, IIe, or IIc; joystick, keyboard, or mouse

Electronic Arts
2755 Campus Drive
San Mateo, CA 94403
(415) 571-7171

CIRCLE READER SERVICE NO. **522**

SERIES

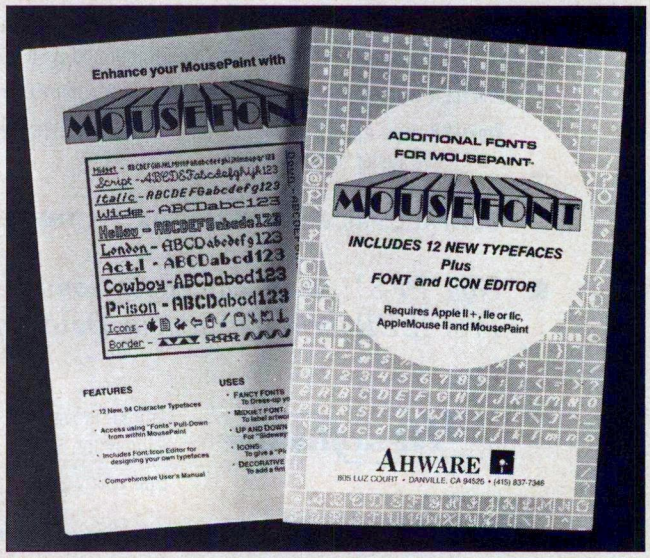
MOUSEFONT

With Mousefont, users can add 12 new, 94-character typefaces to the existing five that Apple's MousePaint program contains. The menu-driven program includes Midget, a labeling font; Icons, which gives picture messages; Down, for sideways labeling; Border, for typing decorative borders; and eight fancy fonts. All fonts are accessible through MousePaint's Fonts pull-down menu. In addition, Mousefont includes a Font and Icon editor that enables users to design and install typefaces. *(List Price: $34.95)*

Requires: Apple II Plus, IIe, or IIc; AppleMouse II; MousePaint

Ahware
805 Luz Court
Danville, CA 94526
(415) 837-7346

CIRCLE READER SERVICE NO. **523**



Mousefont provides 12 additional fonts and a Font and Icon editor for users of Apple Computer's MousePaint program.

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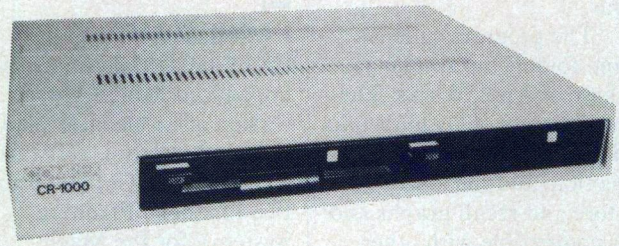

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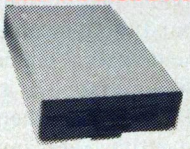

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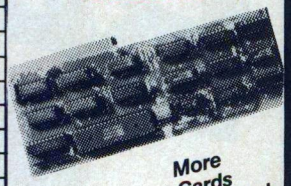

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II SERIES

▸ PBI SOFTWARE

Two new programs in the PBI DeskWorks series are Jeeves, a desktop accessory, and GraphWorks 1.2C, a new version of PBI Software's business-graphics program. Both programs work directly with AppleWorks running on the Apple IIe or IIc.

When you use Jeeves, one keystroke suspends the AppleWorks program and gives you immediate access to five desk organizers: an appointment calendar, a four-function calculator, a memo pad, a phone dialer with directory, or a software alarm clock. When you have finished using these features, another keystroke returns you to your previous location in AppleWorks.

GraphWorks 1.2C lets you convert AppleWorks spreadsheet data files into such graphs as stacked bar, line (with or without plotter points), pie, and interlaced bar.

The program's menus and folders are similar to those of AppleWorks. The new version of GraphWorks has a tutorial, no copy protection, and the ability to store and recall graphs and is compatible with other graphic-screen-dump editors. *(List Price: Jeeves, $49.95; GraphWorks, $79.95)*

Requires: Apple IIe or IIc; AppleWorks, Version 1.1 or 1.2; Mousecard, AST Multi I/O, or Thunderclock (Jeeves and IIe only)

PBI Software, Inc.
1155B-H Chess Drive
Foster City, CA 94404
(800) 843-5722
in CA (800) 572-2746

CIRCLE READER SERVICE NO. **510**

MAC

▸ MINDSIGHT

EXECUCOM Systems has introduced MindSight, a version of its business-planning and -analysis software package IFPS(R) (Interactive Financial Planning System), for the Macintosh.

Features such as Modeling, Data Management, What If?, Goal Seeking, Graphics, and Reporting, previously available only on mainframe and minicomputers, are standard features of the Macintosh package. MindSight also performs functions such as automatic solution of simultaneous equations, logical consolidation of models and data by variable name; financial, statistical, and mathematical functions and subroutines; macros for text substitution; and a full-screen editor. The package can work as a stand-alone system or integrate with corporate mainframes, minicomputers, and microcomputers. *(List Price: $495)*

Requires: Macintosh, 512K, two disk drives

EXECUCOM Systems Corporation
3410 Far West Blvd.
Austin, TX 78731
(512) 346-4980

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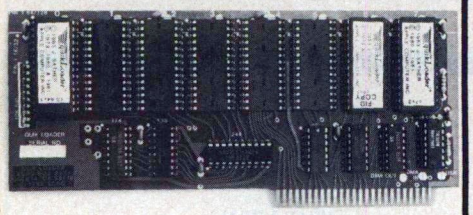
quikLoader™



designed by Jim Sather

- **Instantly** loads DOS.
- **Instantly** loads programs.
- Stores up to 512K of programs on **EPROM.**
- Stores and catalogs up to 255 programs.
- Directions included to load your own software (requires **EPROM** programmer card).
- Plugs into any slot of the APPLE][+ or //e.
- Uses standard 27 series **EPROMs** up to 27512.
- Allows turnkey operation.
- Commercial programs available.
- Includes **DOS, FID, COPYA,** and Integer.

The benefits of **quikLoader™** start when you turn on the computer. Standard DOS is *instantly* loaded. You may then catalog the programs available on the card by pressing **Q-reset**. Typing the index letter that appears on the left of the program name causes that program to be *immediately* loaded. We start your library of programs with the most popular utilities on **EPROM**, **FID** and **COPYA.** Now, if you have to copy a disk, you don't have to search for the master disk. You can start copying within **3** seconds after powering on.

Saving your own programs onto **EPROM** (**E**raseable **P**rogrammable **R**ead **O**nly **M**emory) is easily done, using a seperate **EPROM** programer, (such as the **PROmGRAMER™**). For APPLESOFT™, Integer, or single machine language files, no programming knowledge is necessary. You will need experience if you want to save copy-protected or complex programs. The amount of experience necessary depends on the complexity of the program.

SYSTEM REQUIREMENTS

The quikLoader plugs into any slot of the][,][+, or //e. If installed in a][+, a slightly modified 16K card in slot Ø is suggested. A disk drive is required to save data.

$179.50

DOS, Integer basic, FID, and COPYA are copyrighted programs of APPLE COMPUTER INC. licensed to SOUTHERN CALIFORNIA RESEARCH GROUP to distribute for use only in combination with quikLoader.

PROmGRAMER

designed by Bob Brice — software by Bob Sander-Cederlof

The PROmGRAMER™ will read or program any of the standard single voltage EPROMS, from the 2708 to the 27512. Features include:

- Slot independent operation for the APPLE // family of computers.
- Zero-insertion force sockets accepts 24 or 28 pin devices.
- Choice of standard or fast programming algorithms.
- Disk-based software allows easy customization of software
- Source code included.
- Complete instructions for loading **PROmGRAMER** software into **quikLoader™.**

$149.50

EXTEND-A-SLOT

$34.95

The **EXTEND-A-SLOT** brings a slot outside your APPLE™, allowing an easy change of cards. The 18" flex cable is long enough to allow placement of the card in a convenient location. The high quality connectors are gold plated for reliability.

EASY TO USE—just plug it in as you would any expansion card, then plug your card in. When you want to change cards, do it easily outside the computer, without the wear and tear on the computer expansion slot.

SWITCH-A-SLOT

$179.50

designed by Joy George

The **SWITCH-A-SLOT** is an expansion chassis, which allows the user to plug in up to four peripheral cards at one time. One of these cards is selected for use, and only that card draws power.

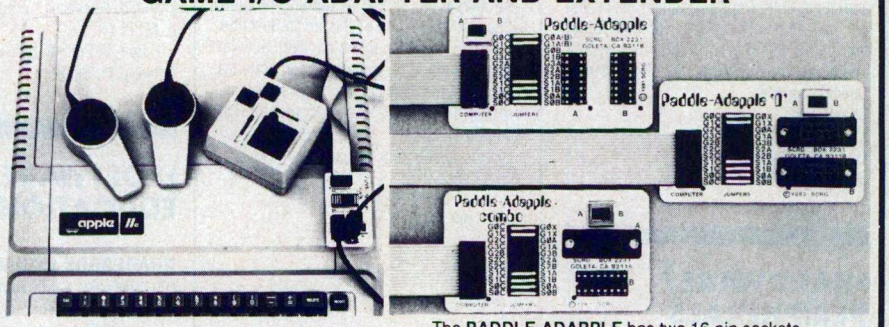
This product is especially useful where the software requires the printer to be in a particular slot, and the user wishes to choose between two or more printers.

- User selects desired card by front panel rotary switch.
- Plugs into any peripheral slot
- Saves wear and tear on delicate connectors.
- 18" cable connects SWITCH-A-SLOT to computer.
- Resistive terminations for better response.

SWITCH-A-SLOT and EXTEND-A-SLOT work well with most slow to medium speed cards, such as Modems, Printers, Clock, 80 Column, Music, etc. They are not recommended for high speed data transfer devices such as disk drive controllers, alternate processor, and memory cards. We cannot guarantee that these products will work with a particular system. We do have a money-back guarantee if it does not work for you.

Paddle-Adapple

GAME I/O ADAPTER AND EXTENDER



- Works with all APPLE™ compatible joysticks, paddles, and most other I/O devices.
- Select one of two devices or...
- Use two joysticks simultaneously
- Suggested for **One-on-One™**, **Archon™**, etc.
- Unique "JUMPERS" socket allows you to configure to meet your needs.
- Plugs into internal 16-pin game I/O port.
- Small and compact. Adhers to computer with supplied foam tape.
- All strobes, annunciators and power available on all 16 pin sockets.
- Supplied with 18" cable.

$29.95

The **PADDLE-ADAPPLE** has two 16-pin sockets.

The **PADDLE-ADAPPLE 'D'** has two 'D' sub-miniature connectors.

The **PADDLE-ADAPPLE COMBO** has one 16-pin socket, and one sub-miniature connector.

NEW PRODUCTS

SLOT 3 CLOCK

Designed by Chuck Shaffer

for APPLE //e

- Fully supports **PRODOS™**. •APPLESOFT™ compatible.
- Designed for slot 3 (usually otherwise unusable).
- Time and date-stamp files under PRODOS.
- Long-life lithium battery included.
- Installation software included.

$79.50

DUAL KEYBOARD ADAPTER

For Apple][and][+ only.

Allows the use of the built-in keyboard or external keyboard with no switching necessary. **$39.50**

//c keypad

This kit will give you an "embedded" keypad within your built-in keyboard. You may instantly switch between the keypad or the standard keyboard. **CAUTION** – Requires dis-assembly of the computer, and expert de-soldering and soldering ability. **$29.95**

OTHER PRODUCTS

D MANUAL CONTROLLER: Gives complete control over the $CØØØ through $CØFF range in hardware. Think of it as a hardware switch for soft switches. Can be switched while program is running. **$89.50**

MAGIC KEYBOARD (for][or][+ only) Re-encodes the keyboard to give alternate keyboards, such as DVORAK, A.S.K., 10-KEY, HEXADECIMAL KEYPAD, etc. **$49.50**

9-16 Adapter

For Apple //e and //c

This product permits the use of most 16 pin I/O devices with the APPLE //c or //e. By plugging this adapter into the sub-miniature 'D' connector, (in back of the computer), you can plug in a 16-pin device, such as the PADDLE-ADAPPLE, paddles, joystick, KOALA PAD™, etc. The only limitations are those devices that use the annunciators or the CØ4Ø strobe, such as the POWER PAD™. Please note that the //c does not support 2-joystick games.

$14.95

16-9 Adapter

For Apple][+ or //e

This product permits the use of all 9-pin game I/O devices with the APPLE][+. By plugging this adapter into the internal 16-pin connector, you can plug in any 9-pin game game device, such as paddles, joysticks, KOALA PAD™, Muppet Learning Keys™, etc.

$14.95

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TOLL-FREE ORDER LINES

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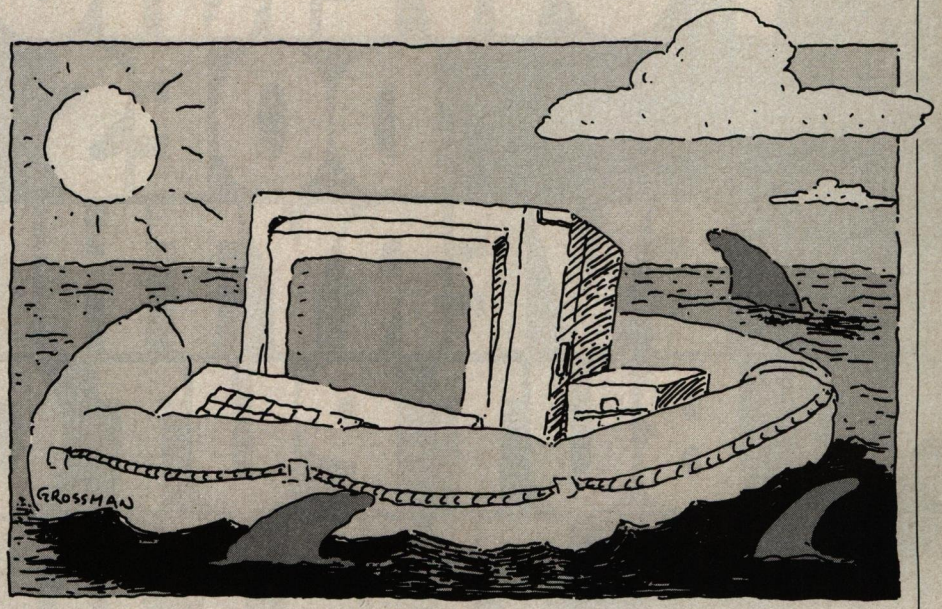
RESCUE SQUAD
BY GARY B. LITTLE
Questions from our readers



MANUAL LABOR

Q. *I've been trying desperately to obtain the two-volume* Apple IIc Reference Manual *for almost a year now. Where can I buy it?*

A. Until recently, Apple has had considerable difficulty distributing any of its reference manuals, including those for the IIc. The problem was that Apple sold the manuals to its computer dealers only (as opposed to regular bookstores), dealers that, in the main, preferred to sell hardware or software, but not books. To make matters worse, Apple insisted that dealers could not purchase fewer than five copies of any manual at once.

But late last year, Apple entered into an exclusive distribution agreement with Addison-Wesley, a large book publisher. Addison-Wesley has committed itself to getting the books into traditional bookstores as well as computer stores, so the manuals should now be much easier to find. If you're still having difficulties finding the "official" IIc reference manuals, you may want to consider independent alternatives such as *Inside the Apple IIc* (Brady Communications, 1985), or *Apple IIc Users Guide* (1985, Osborne/McGraw-Hill).

80-COLUMN QUIRKS

Q. *I recently entered and ran the following short program on my Apple IIe:*

```
100 PRINT CHR$(4);"PR#3"
200 HOME : VTAB 20: PRINT "HELLO,
    WORLD"
```

Much to my surprise, the message HELLO, WORLD was printed on line 1 and not line 20, despite my use of VTAB 20. If I try the same thing in the 40-column mode, the program works fine. What's going on?

A. One of the quirks in the 80-column firmware that Apple uses on the IIe is that the VTAB command does not affect the vertical cursor position unless you have printed something to the screen since you entered the last PR#3 command.

To avoid this problem, always include a Print statement right after you turn the 80-column screen on with PR#3. That is, change line 100 to

```
100 PRINT CHR$(4);"PR#3": PRINT
```

There are other problems with the 80-column firmware on the IIe. Here are some of the most bothersome:

- If the left edge of the window is nonzero, anything printed after a VTAB statement will be misplaced.
- In certain circumstances, HTAB does not work properly.
- Switching from the 80-column mode to 40-column mode by entering ESC 4 can trash your program if the cursor is in the right half of the screen.
- The cursor sometimes jumps around erratically if you input anything while a narrow screen window is set.

These bugs (but not the VTAB bug) have been fixed in the new MouseText ROMs that are in every IIe built since April 1985. See the August 1985 issue of *A+* for a detailed description of these ROMs.

MODEM CHOICES

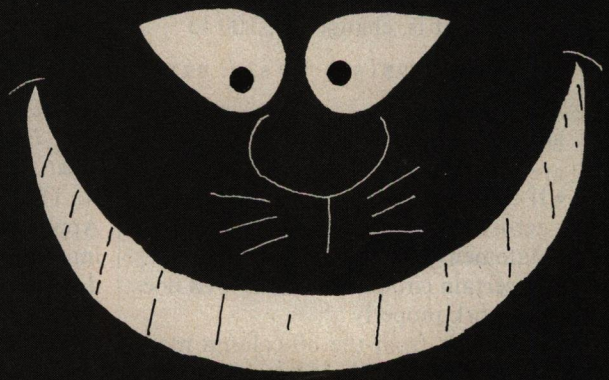
Q. *I'm using a 128K Apple IIe with two disk drives. I now want to buy a 1200-bps modem and a communications program that will work with my system. Do you have any suggestions on what I should buy?*

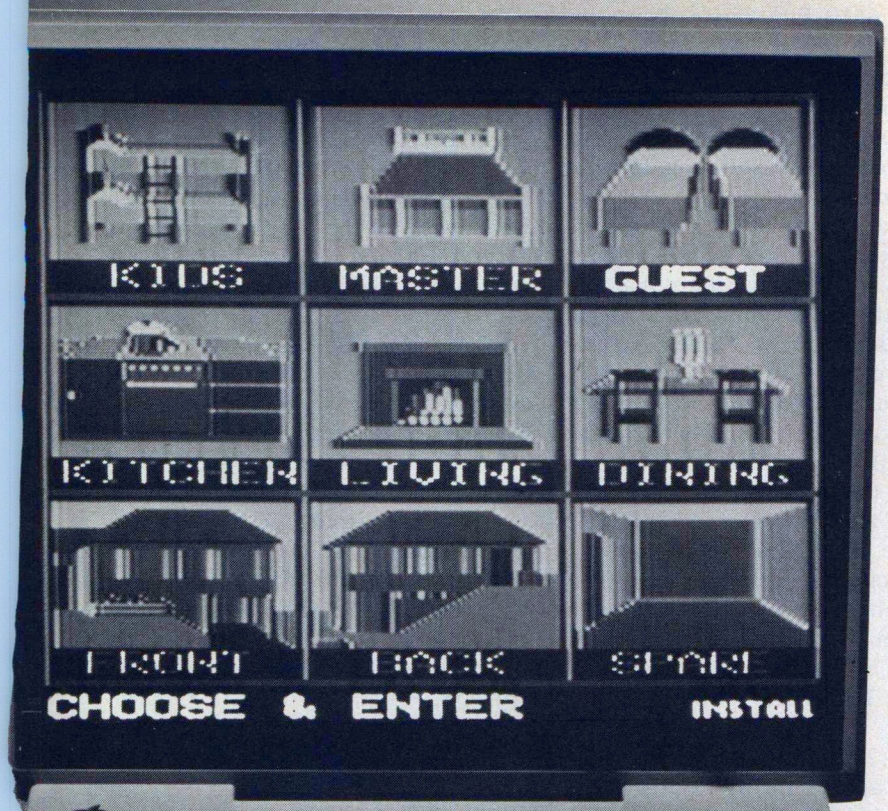
A. The modems you can use with the Apple IIe come in basically two types: internal or external. An internal modem is one that is wholly contained on an interface card that plugs into one of the IIe's expansion slots. It is very easy to install, because the only cable to connect is the telephone cord. Only four 1200-bps internal modems are available for the IIe at present:

- the ProModem 1200A from Prome-

MYRON GROSSMAN

THE X-10 POWERHOUSE DOES EVERYTHING BUT PUT OUT THE CAT.



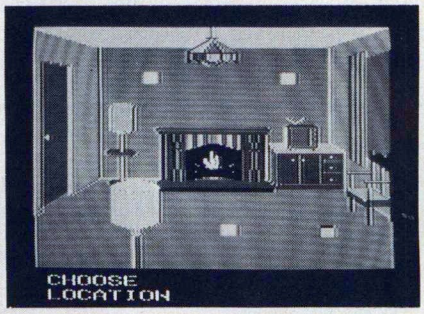


THE X-10 POWERHOUSE INTERFACES WITH YOUR APPLE TO CONTROL YOUR HOME...FOR SECURITY, COMFORT AND ENERGY SAVINGS.

This remarkable interface lets you run your home through your Apple IIc or IIe and a mouse, keyboard or joystick.

When you're away, it makes your home look lived in. When you're home, it can turn off the TV at night and wake you up to stereo and fresh brewed coffee in the morning. It can even turn on your air conditioner and control your heating.

SPECIAL COLOR GRAPHICS MAKE PROGRAMMING A SNAP. You simply pick a room from the display screen. Use your mouse or joystick to position graphics of lights or appliances. Then follow on-screen instructions to program any light or appliance to go on or off whenever you choose. You can even control thermostats, light intensity and more.



IT WON'T TIE UP YOUR COMPUTER. Use your computer only for programming. When you're finished, disconnect the interface, and use it anywhere in the house as a stand-alone controller with battery back-up. Your home will run automatically. The interface plugs into any 110V outlet, and sends digitally encoded signals through your house wiring. Installation is simple; just plug the lamp or appliance you want to control into an X-10 module. No special wiring is needed. The interface can control up to 256 modules. X-10 modules are supplied separately to work with 110V and 220V circuits.

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Commodore 64 is a registered trademark of Commodore Int'l, Ltd.

theus Products Incorporated, 4545 Cushing Pkwy., Fremont, CA 94538; (415) 490-2370

- the Apple-Mate 1200 from Sunnyvale Communications Company (Cermetek), 1308 Borregas Avenue, Sunnyvale, CA 94088-3565; (408) 752-5095
- the ERA 2 from Microcom, Inc., 1400A Providence Highway, Norwood, MA 02062; (617) 762-9310
- the 212 Apple-Cat II from Novation, Inc., 20409 Prairie Street, Chatsworth, CA 91311; (818) 996-5060

An external modem is one that connects through a cable to a modem interface called an asynchronous serial-interface card that is plugged into the IIe. Examples of serial interfaces you can use with modems are the Apple Super Serial Card, the AST Multi-I/O Card, and the Prometheus Versacard.

External modems are quite popular, especially with people who own more than one computer, because you can use them with any computer that has a serial interface. If you have only one computer, however, external modems are more expensive than internal ones, because you must also buy the serial-interface card and a connecting cable.

The industry-standard 1200-bps external modem is the Hayes Smartmodem 1200 from Hayes Microcomputer Products, 6610 Bay Circle, Norcross, GA 30071; (404) 662-7100. The Smartmodem was the first so-called intelligent modem—that is, a modem that responds to a set of commands that control such things as dialing, answering, or hanging up.

There are many other manufacturers of external intelligent modems, most of which produce units that understand the same commands that the Smartmodem does. Some popular brands are the Apple Modem 1200, Prometheus ProModem, the U.S. Robotics Password, the Anchor Automation Signalman, the Novation Smart-Cat—and the list goes on.

Just as many modems are available for the IIe, so too are many communications programs that let you easily interact with other computers through the modem. The most popular is ASCII Express: The Professional, from United Software Industries, 1880 Century Park East, Century Park, CA 90067; (213) 556-2211. Other useful programs are Datacapture IIe by Southeastern Software, 6414 Derbyshire Drive, New Orleans, LA 70126; (504) 246-7937 and Easy Com/Easy Go by Transend Corporation, 1887 O'Toole Avenue, San Jose, CA 95131; (408) 946-7400.

If you are budget-conscious, you may want to consider a recently released program called Modem Magician. It costs only $40 and is available from the A.P.P.L.E. Co-op, 290 S.W. 43rd, Renton, WA 98055; (206) 251-5222. The Modem Magician system works with all the popular modems, is easy to use, and includes versions that work with DOS 3.3 and with ProDOS.

▶IIc HARD DISKS

Q. *Are there any hard-disk drives available for the Apple IIc?*

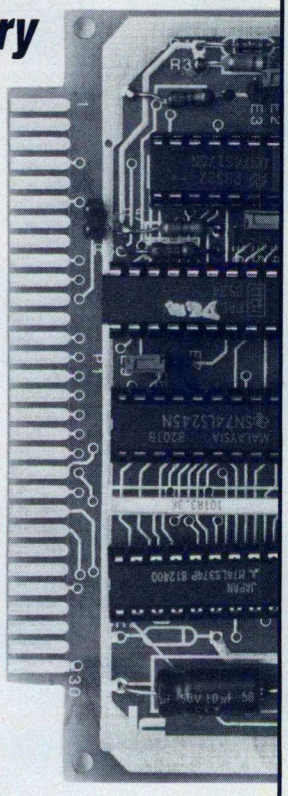
A. Quark Peripherals, Inc., of Denver, Colorado, makes the only hard-disk drives for the IIc of which I am aware. The two versions, the QC10 (10 megabytes) and the QC20 (20 megabytes), also work with the Apple IIe or the Macintosh. Either disk plugs directly into the external disk-drive port at the back of the IIc and works under the ProDOS, Pascal 1.2, or DOS 3.3 operating systems with software drivers Quark provides. You can contact Quark at (303) 934-2211. ✚

Please send your questions and problems to Rescue Squad, A+, 11 Davis Drive, Belmont, CA 94002.

Finally, an end to the wait for low-cost memory

What You Get	Price	Product	Compatibility
256K plus 80 columns	$199	ADD-RAM 80/256™	Apple IIe®
64K plus 80 columns*	$ 99	ADD-RAM 80/64™	Apple IIe
16K	$ 99	ADD-RAM™	Apple II, II Plus®
80 column screen	$179	SMARTERM II™	Apple II, II Plus, IIe®

*can be upgraded to 256K



▶ADD-RAM 80/256 and ADD-RAM 80/64 Advanced Memory Boards

Until now if you wanted more speed and memory you had to buy another disk drive. Or another computer. Or you could just wait patiently as the disk drive hummed and the red light glowed.

Now, you can get speed and 64K or 256K additional memory by just slipping an ADD-RAM memory board from Advanced Logic Systems into your Apple IIe. Simply back-up your programs onto the ADD-RAM board for faster access to files and applications. And still retain 80 column screen width.

▶ADD-RAM and SMARTERM II: Rounding Out the Family

To upgrade your Apple II or Apple II Plus from 48K to 64K, take advantage of the original ADD-RAM. Or if memory is adequate, upgrade to 80 columns with SMARTERM II for your Apple II, II Plus or IIe.

Visit your Apple Dealer today to see ADD-RAM and SMARTERM II in action. Or contact us directly.

If you knew what we know about our products, you'd be our next customer.

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Sensible Speller	73.30	MultiRam //c 512K	310.95
Spellworks	34.95	R.G.B interface	CALL
KeyBoard Template	15.95	256K Chips	CALL
Speedemon	196.50	64K Chips	CALL
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VIEWMASTER	115.00	Z-80 PLUS	108.00

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Flashcalc	61.50
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Epson JX-80	493.95
Epson FX-85	339.95
Epson FX-185	479.95
Epson LQ-1500	899.00
Toshiba Printers	$CALL

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Agent U.S.A	24.00
Turtle Tracks	24.00
Spinnaker Full Line	$CALL
Stickybear Series ea.	24.00

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Amdex 300G 12"	123.00
Amdex 300A 12"	123.00
Amdex Color 300	231.00
Amdex Color 500	360.75
Amdex Color 600	424.35
RGB Interface	127.00
Buffered Grappler+	145.00
Dumpling GX	61.05
Echo II Plus	93.00
GAMBIT	**$SPECIAL**
Grappler +	74.40
Mach III w/Fire	34.00
Zee 80A (Z80 Card)	69.00
Ile 80Ram Card	$CALL
Microfazer all modles	$CALL
System Saver	62.00
The Cricket //c	111.00
TG Select-A-Port	23.95
Thunderclock +	109.00
Trackhouse Key Pad	85.00
Videx Ultraterm	229.00
Wildcard II (Pro/Dos)	CALL
QUARK HARD DISK	
QC-10 //ec, Mac	1043.05
QC-20 //ec, Mac	1445.55
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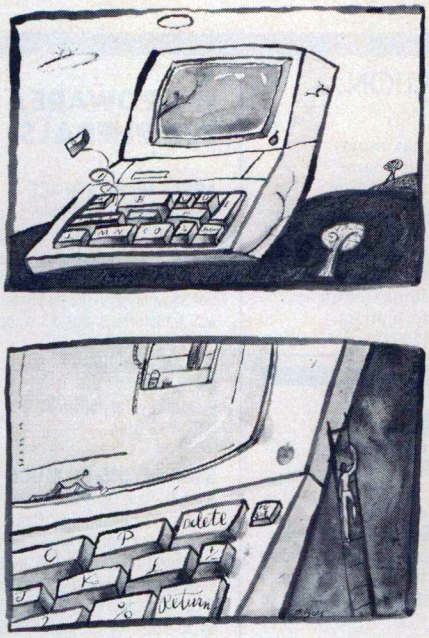
FREE **505/887-1492** **CATALOG**

CIRCLE 137 ON READER SERVICE CARD

COMING UP



New Products from Apple

Word-Processing Overview and Chart

Software:
Aladin
Project Planner
AppleWorks Interchange

Hardware:
Laser Printers

Entertainment:
Halley's Comet
Pyramid of Peril
Willy Byte
Sword of Kadash
Ghostbusters

Macintosh Family:
Mac Fonts, Part I
TimeBase Review
Jigsaw Puzzles
LaserWriter for Nonowners
Smartcom II

FREE? DISKETTES

SAVE MONEY! Apple II series users can use the diskette flip side, if another "write enable" notch is correctly made.

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- Clippings Catcher
- Square Notch Cut
- Black Finish

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- CREATE 40 trk DISKS & SYSTEM MASTER
- RECORDS TEST DATE onto disk
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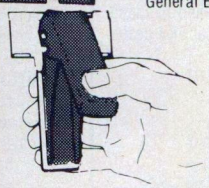

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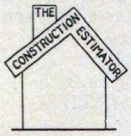

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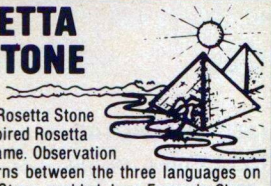

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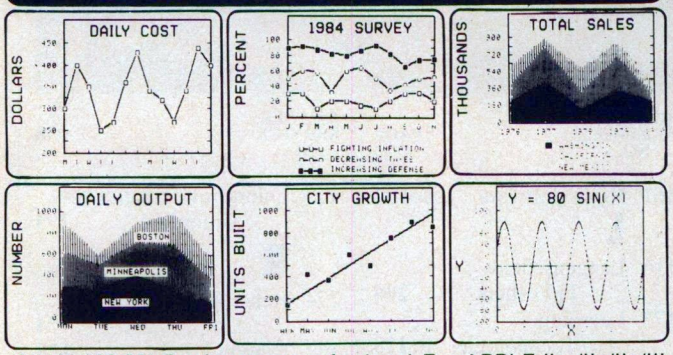

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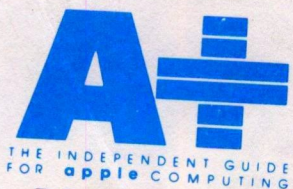

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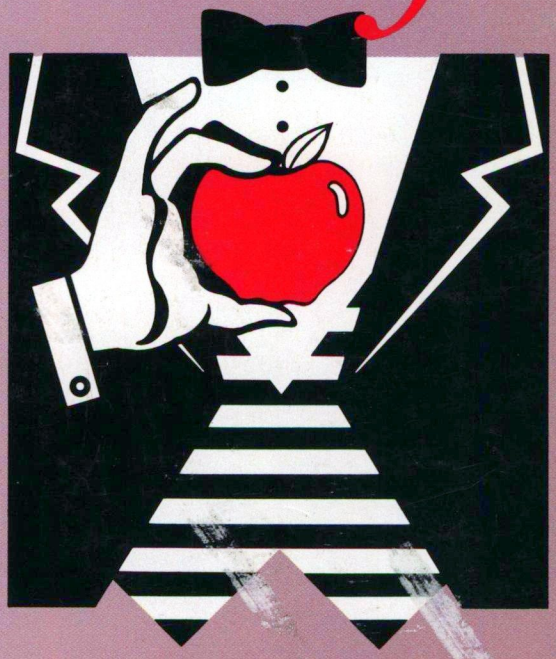

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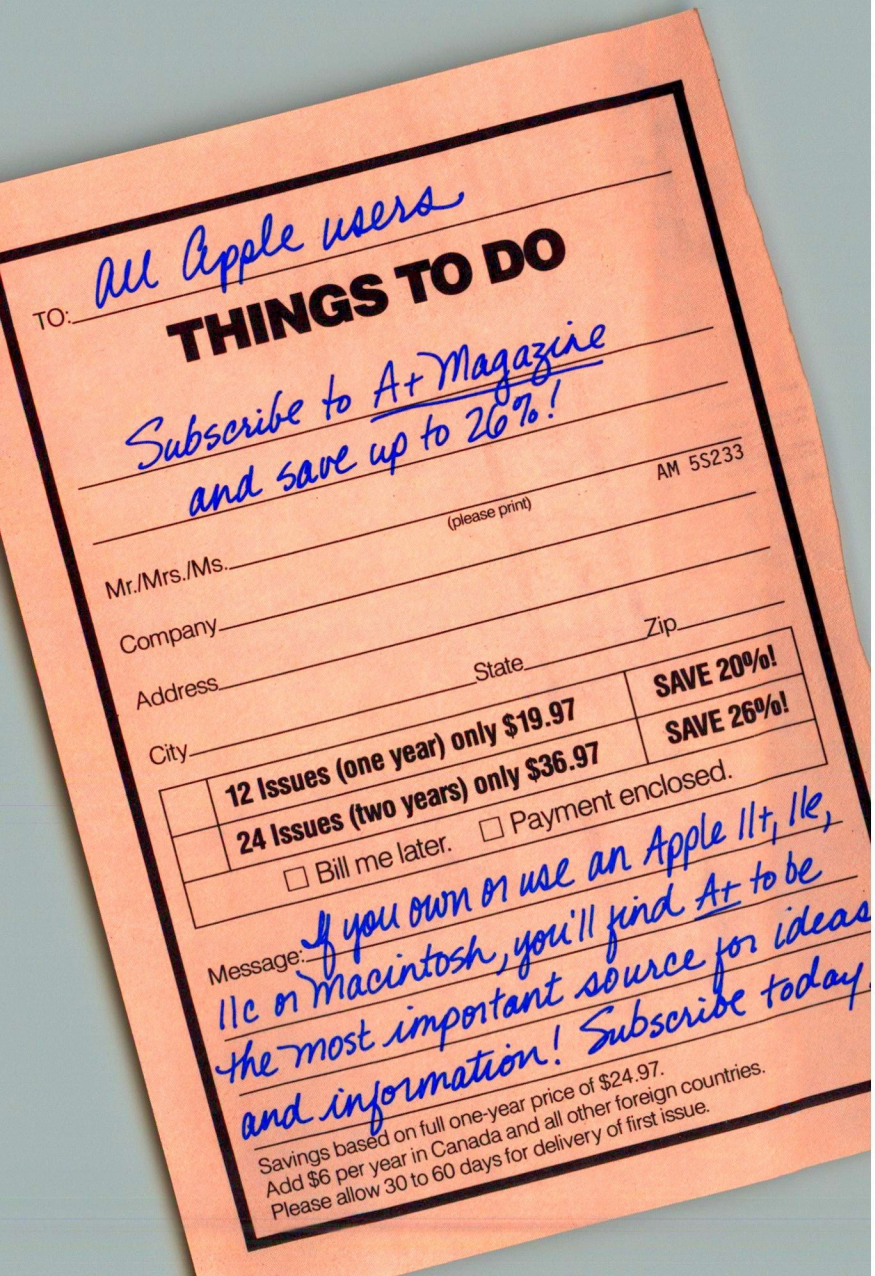
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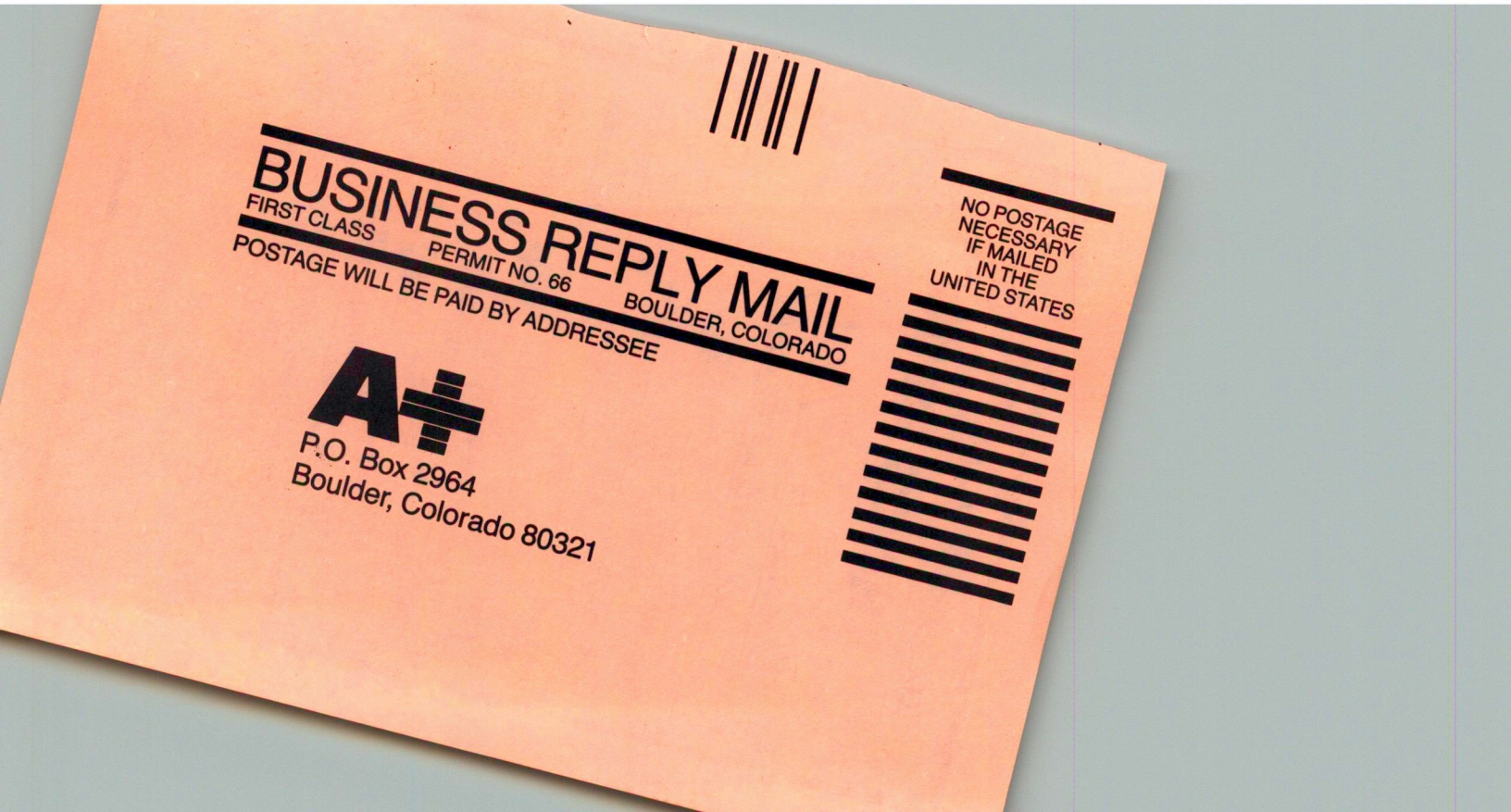
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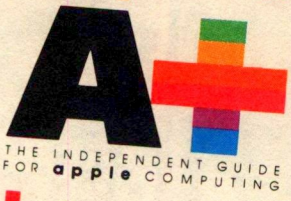

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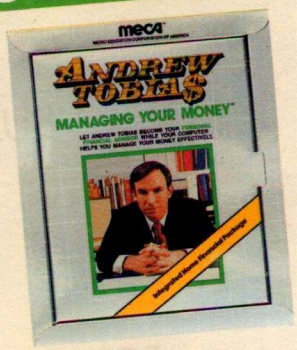

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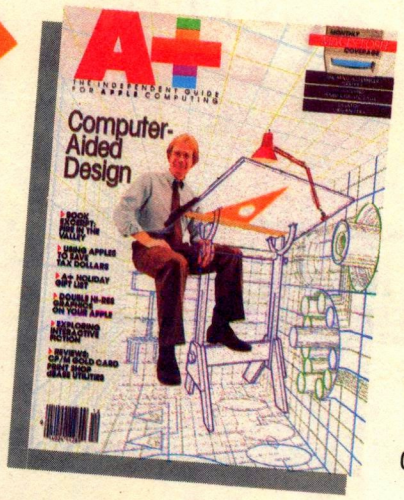

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